THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
The Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal ESTABLISHED 1835 · THE RAILWAY RECORD.
RAILWAYS ILLUSTRATED · THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (6 lines)

Annual subscription payable in advance and postage free:
British Isles and Abroad .....£2 5s. 0d.
Single Copies .....One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 70. No. 7 FRIDAY, FEBRUARY 17, 1939

## CONTENTS

| | PAGE |
|---|---|
| Editorials | 249 |
| Letters to the Editor | 256 |
| Publications Received | 257 |
| The Scrap Heap | 258 |
| Overseas Railway Affairs | 259 |
| The North Woolwich Line Tunnel | 262 |
| Weed-Killing Records, S.R. | 263 |
| Locomotive Boiler Explosion | 264 |
| New American 4-6+6-4 Articulated Locomotives | 265 |
| New Rolling Stock, Czecho-Slovak State Railways | 267 |
| Reconstruction of Trenance Viaduct, G.W.R. | 268 |
| Railway News Section | 271 |

### *DIESEL RAILWAY TRACTION*

*A Supplement illustrating and describing developments in Diesel Railway Traction is presented with every copy of this week's issue*

## "Square Deal" Progress

WHILE the past week has not been marked by any important development in connection with the railway companies' application to the Minister of Transport for the removal of the statutory control of rates for the conveyance of merchandise, negotiations have been steadily pursued with representative transport and trading organisations with the object of endeavouring to reach a basis of agreement on the proposals. Lengthy discussions with the Mining Association have failed, however, to reassure them that the grant of the freedom which the companies desire will not contain the possibility of the coal selling schemes which have been established under the provisions of the Coal Mines Act, 1930, being affected adversely or necessitate some alteration in the present allocation of tonnage between the various districts. While being sympathetic with the railway claim, the association has, therefore, decided to submit a separate memorandum to the Transport Advisory Council outlining its position. Somewhat lengthy negotiations with the coastwise shipping interests are now reaching a conclusion, and it is hoped that the preparation of a joint memorandum will be possible. Discussions were held with the principal agricultural interests on February 14 and satisfactory progress made, and it is hoped that final agreement will be reached next week. On February 16 the companies met the Traders' Co-ordinating Committee and the special committee of the Transport Advisory Council met on February 17 to review the progress made by the companies in their discussions and to determine future policy.

* * * *

## Telling the World

The railway companies are circulating to all their shareholders, who number over 800,000, a reasoned statement of the developments which rendered their representations to the Minister imperative. Arrangements have also been made for prominent railway officials to address meetings of trade associations and chambers of commerce in the more important centres of industry for the purpose of explaining the companies' case, and reassuring traders generally as to the effect of the grant of their application. One of the first of these was held on February 13 when Sir Ronald Matthews, Chairman of the L.N.E.R., addressed the Newcastle and Gateshead Incorporated Chamber of Commerce at Newcastle-upon-Tyne. Among other interesting statements, he made the point that the British railways have never cost the British taxpayer a penny piece but, unless they are quickly freed from the constriction of archaic statutory control, which is unjustified now that the railways no longer possess a transport monopoly, the Government will have to come to their aid and, for the first time in their history, their hand will be deep in the pocket of the already sorely tried taxpayer. Mr. A. E. Sewell, Goods Manager for the Scottish Area of the L.N.E.R., and Chairman of the Goods Managers' Conference, put the railway case to the Edinburgh Chamber of Commerce on February 14, and Lord Stamp addressed the Glasgow Chamber on the following day.

* * * *

## The Week's Traffics

In the traffic receipts of the four main line railways for the past week the rate of decrease is lower than that for the previous week, namely, £136,000 against £163,000. Pasengers contribute £11,000, merchandise £116,000, and coal £9,000 to last week's decrease. The corresponding week a year ago showed a passenger increase of £19,000, a merchandise increase of £53,000, and a coal increase of £17,000 over the 6th week of 1937. To date the combined traffics for 1939 are £16,089,000, a decrease of £1,256,000 or 7·24 per cent. in comparison with 1938.

| | 6th Week | | | | | | | | Year to date | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pass., &c. | | Goods, &c. | | Coal, &c. | | Total | | Inc. or Dec. | |
| | £ | | £ | | £ | | £ | | £ | % |
| L.M.S.R. .. | − | 10,000 | − | 49,000 | + | 5,000 | − | 54,000 | − | 505,000 | − 7·17 |
| L.N.E.R. .. | + | 1,000 | − | 52,000 | − | 10,000 | − | 61,000 | − | 479,000 | − 9·15 |
| G.W.R. .. | − | 4,000 | − | 9,000 | − | 5,000 | − | 18,000 | − | 221,000 | − 7·55 |
| S.R. .. .. | + | 2,000 | − | 6,000 | + | 1,000 | − | 3,000 | − | 51,000 | − 2·39 |

Great Northern (Ireland) traffics for the first six weeks of the present year show a net increase of £3,750. Goods are up £4,700 but passengers are £950 down. At this time a year ago passenger receipts were up £3,800, and goods traffic receipts were £2,150 down.

* * * *

## The Light that Failed

An abstruse process of reasoning practised by some sections of the public leads them to believe that the railways would be better able to deal with exceptional demands upon their passenger accommodation, were they condemned to suffer perpetually from the restrictions on goods traffic now forming the subject of the "square deal" campaign. That, at least, is how we interpret the tenor of most of the complaints launched under the general heading of "a square deal all round." Since the correspondence in *The Times* between Sir William V. Wood and others early this year, quoted in our January 13 issue, Sir William has replied through the *News Chronicle* to a criticism of railway service inspired by similar un-

XUM

fortunate episodes of travel during the Christmas rush. On this occasion the critic, dating his letter from the House of Commons, again quoted a case of electric light failure in a main-line carriage as an argument to support his conclusion that with a few exceptions our train services are " mediocre and in many cases downright bad " —and by implication ought to be dealt with by turning a deaf ear to appeals for a " square deal." Sir William Wood's reply that the failure occurred in one coach in one out of 13,500 trains demonstrated that here at least argument was being made from the particular to the general, with all its risks of fallacious conclusions.

* * * *

## Belfast & County Down Railway

Gross railway receipts in 1938 decreased by £6,862 to £149,476, and expenditure increased from £152,140 to £154,164, so that there was a loss on working of £4,688, against a profit for 1937 of £4,198. Hotel net receipts were £3,338 compared with £4,061. In aid of net revenue the sum of £10,217 has been transferred from the compensation fund under the Irish Railways (Settlement of Claims) Act, 1921, reducing that fund to £47,613. Interest received on Northern Ireland Road Transport Board stocks was only £51, compared with £798 in 1937. The general financial position is compared in the accompanying table:—

| | 1936 | 1937 | 1938 |
|---|---|---|---|
| | £ | £ | £ |
| Gross receipts from businesses .. .. | 183,117 | 178,914 | 171,972 |
| Net receipts from businesses .. .. | 8,797 | 8,259 | Dr.1,350 |
| Compensation under Settlement of Claims Act .. .. .. .. | — | — | 10,217 |
| Miscellaneous receipts, net .. .. | 6,668 | 6,582 | 5,674 |
| Total net income .. .. .. | 15,465 | 14,842 | 14,541 |
| Prior charges .. .. .. .. | 13,940 | 13,940 | 13,940 |
| Dividends on baronial guaranteed shares and 4½ per cent. preference stock .. | 1,635 | 1,635 | 1,635 |
| Brought forward .. .. .. .. | 1,877 | 1,767 | 1,034 |
| Carried forward .. .. .. .. | 1,767 | 1,034 | — |

Profits in the last six months of 1938 suffice for the interest on the 4½ per cent. " A " preference stock for that period, but not for any dividend on the 5 per cent. or 4 per cent. preferences.

* * * *

## Underground Figures

The fourth and fifth examples of the series of statistical advertisements dealing with the Underground railways, which London Transport has placed in the daily and popular periodical press, deal with, respectively, staff and the many unobstrusive machines and appliances installed for convenience and safety. The Underground staff numbers some 7,000 men, and among those with whom the public comes in contact are 1,000 booking clerks, and 800 ticket collectors. Included with the more " retiring " members are 250 signalmen, 1,500 skilled drivers (each train, incidentally, has its guard capable of taking the driver's place in an emergency), and 500 inspectors, yardmasters, foremen, and stationmasters. The punctuality and reliability of the services, it is pointed out, depend on their efforts, and the fact that a mere four-minute delay occurs in 2,000 journeys is an indication of their response. For safety and comfort on the Underground are 320 miles of telephone wire for cutting off the current in an emergency; five miles of asbestos packing in the tunnels to reduce noise (two more miles are going in on current orders); 80 fans, pumping in 3,000,000 cu. ft. of air a minute, capable of changing the air in the tunnels four times in every hour and maintaining it at a temperature of between 60 and 70° F., 290 water pumps to keep the premises dry; and some 10,000 miles of telephone wire.

## Mersey Railway Company

The passenger traffic carried by this company continues to progress and in 1938 the number carried was 16,690,736, an improvement of 924,325 on 1937, and the number originating on the company's system was 520,317 greater at 14,405,832. First class receipts declined from £39,121 to £37,015, but third class rose from £147,987 to £155,537, and workmen's tickets from £26,106 to £29,774. Parcels (£7,103) brought in £112 less. Train miles increased from 531,989 to 605,480, and locomotive running and traffic expenses from £76,196 to £80,415. The operating ratio was reduced from 59·32 per cent. to 58·74 per cent. Other results are compared in the following table:—

| | 1936 | 1937 | 1938 |
|---|---|---|---|
| | £ | £ | £ |
| Gross receipts .. .. | 217,012 | 221,560 | 230,567 |
| Expenditure .. .. | 127,640 | 131,457 | 135,452 |
| Net receipts .. .. .. | 89,372 | 90,103 | 95,115 |
| Net revenue .. .. .. | 89,049 | 89,006 | 94,667 |
| Deb. and pref. payments .. | 75,615 | 75,615 | 75,615 |
| Ordinary dividend .. .. | 12,357 | 12,357 | 17,653 |
| Carried forward .. .. | 2,167 | 2,201 | 2,690 |

The through service of electric trains between Liverpool and the Wirral Section of the L.M.S.R. began on March 14, 1938, and has contributed to the increased receipts.

* * * *

## Spanish Railway Rehabilitation

With normal working in prospect on the greater part of the railway system of Spain, an extensive plan of rehabilitation will no doubt have to be considered by the Nationalist Government. Arrears of maintenance will have to be overtaken, in both track and rolling stock, while war damage will involve some important bridge reconstruction. The Nationalist Government had already foreseen the necessity for extraordinary measures to meet wartime and post-war demands on the railways, and the Decree of March 12, 1938, authorised an expenditure of 149 million pesetas (about 3½ million sterling) on this account, to be spread over a period of years. (See THE RAILWAY GAZETTE of May 13, 1938, page 922.) This outlay is in the form of an advance by the Government for account of the railway companies, and it includes provision for track material, locomotives, and rolling stock. The Spanish manufacturers were able to meet demands for all these classes of materials in normal times, but it is possible that their output will now have to be supplemented from other sources and that protection will be relaxed. Difficulty may be experienced in the provision of foreign exchange, but this may be met with the increase to be expected in Spanish exports.

* * * *

## Early Ticket Interavailability

The reluctance of some transport operators has made for slow development of interavailable facilities between different forms of transport. This statement was made in a paper (abstracted on page 281) which was read to the Institute of Transport last Monday by Mr. J. C. Chambers, Road Transport Liaison Officer, Southern Railway. The speaker added that traces of the facility existed, however, in 1866 between the London & Margate Saloon Steam Facket Company and the Great Eastern Railway. Steamer passengers booking from Swan Pier to Margate could travel by train from Fenchurch Street to Blackwall Pier, and board the boat there. In 1897 the General Steam Navigation Company and the Great Eastern Railway arranged that passengers travelling outwards to Yarmouth by train could return by either steamer or train; two years later the London Chatham & Dover Railway concluded a similar arrangement concerning Margate. All

these cases, in which the passenger could choose his mode of transport for the return home, represented, of course, true interavailability in contrast to the combined rail and steamer bookings instituted in the early days of railways.

* * * *

**Unusual Features of Elderslie Collision**

In the collision at Elderslie, L.M.S.R., on September 10, 1938, several passengers were hurt by broken glass from photograph frames; and Colonel Trench, whose report is summarised on page 278, suggests the advisability of a substitute. The collision was another example of failure to comply with Rule 55 coinciding with a signalman's forgetfulness and neglect to use the mechanical reminders provided to assist him in his work, and was accompanied by the time-honoured excuse that the driver of the waiting light engine was expecting to be allowed to move at any moment. This engine was in full view, and Colonel Trench does not think there is ground for recommending a track circuit at the spot. The driver knew that the signalman was aware of the move he had to make, but he ought to have complied with the regulations all the same. We have often been surprised at the neglect of trainmen to keep their attention on the signals protecting them when they are waiting, a course which would have at least reduced the consequences of some collisions, if not prevented them; but we do not know if the signals concerned could have been easily seen in this instance. The bending downward of the rails near the point of impact, noted by Colonel Trench, was probably due to the resultant downward thrust of the nearest wheels of the standing engine. This would result from the point of impact being below its centre of gravity, about which the engine would tend to revolve.

* * * *

**Reichsbahn Telegraphs and Telephones in 1938**

Considerable progress was made last year with the extension of carrier telephony equipment on the German State Railway, and at the same time modern teleprinter apparatus superseded the old Hughes printing instruments. There are now 18,000 Km. (11,183 miles) of teleprinter circuits in service. Experiments have been made with the object of introducing a simple form of printing instrument to take the place of the Morse ink writer, still very extensively used in Germany. About 5,000 Km. (3,106 miles) of overhead line wires were added during the year, and the telephone and telegraph facilities in Austria and the Sudeten territory were considerably improved. Many manual telephone exchanges were replaced by automatic, and trials were made with the supply of power to exchanges from the mains, eliminating batteries for normal purposes. The cables on the new motor roads are dealt with by the railway administration, and a section 20 Km. (12·4 miles) long has been experimentally provided with a new substitute covering in place of lead. Telephone shelters along the line are now being made of concrete to reduce the consumption of steel.

* * * *

**Freeing the Exhaust**

With modern valve gears locomotives can be worked at a very low back pressure, discharging an inversely proportional volume of exhaust. A blastpipe of sufficiently large diameter to accommodate the increased quantity of exhaust would not be efficient regarded as a vacuum jet, and also would obstruct a large proportion of the tube plate for the purpose of tube cleaning. Thus for theoretical as well as practical reasons, it is advantageous with modern locomotives to increase the periphery of the jet exhaust by dividing steam into two or more smaller jets, each nearly as effective as vacuum ejectors as the one large one. It is on this principle that the modern varieties of blastpipe and chimney are designed, amongst which the well known Kylchap double-blastpipe and chimney, first popularised in France and now coming into greater favour in this country, are designed. The Lemaître multiple-jet blastpipe which has recently been applied to several of the "Lord Nelson" type 4-6-0 locomotives of the Southern Railway, has also given satisfaction, particularly on the Northern Region lines of the French National Railways where many old locomotives thus fitted, which otherwise would have to be relegated to light duties, are successfully working turn about with much more modern machines. We described the Lemaître arrangement on April 17, 1936.

* * * *

**Locomotive Water Consumption in the U.S.A.**

A statement issued by the Association of American Railroads gives particulars of the consumption of water by locomotives in the U.S.A. It says that approximately 600 thousand million gallons of water are required annually for locomotive boiler feed and other purposes in connection with the railway system of the country. This quantity of water, the statement continues, would be sufficient to meet the needs of the inhabitants of New York City for two years, or a city the size of Washington, D.C., for seventeen years. In volume and weight the quantity of water used by the railways each year is greater than all other materials combined, and in order to provide the amount of water necessary to meet their requirements the railways spend approximately $50,000,000 (£10,309,278) yearly; the cost of replacing their 18,000 existing water stations would be in excess of $400,000,000 (£82,474,227). More than one half of the water required is used for steam purposes. By the treatment of this water to remove harmful ingredients, which cause rust and scale to form on the inside of locomotive boilers, the railways have brought about increased safety and efficiency in operation, as well as substantial annual savings.

* * * *

**A Norwegian Diesel Trial**

Speeds hitherto unprecedented in Norway were attained recently during a trial of a diesel-electric unit borrowed from Denmark for experimental purposes, consisting of two motor-coaches with an ordinary steel bogie coach between them; the whole weighed 153 tons. The distance of 305·8 miles from Oslo to Bergen, on which the line surmounts an altitude of 4,267 ft. at Taugevand lake, between Finse and Myrdal, was completed in 6 hr. 53 min., and the return journey was made in 7 hr., including several short service stops. This compares with a best ordinary express time of 10 hr. 20 min. On the Trondheim route, which on the Dovre section goes over 3,300 ft. at Hjerkinn, between Dombaas and Opdal, the 343·7 miles occupied 7 hr. each way, as compared with a best regular time of 10 hr. 25 min.; and the 226·8 miles between Oslo and Kristiansand were completed in 4 hr. 40 min. instead of the normal 7 hr. 10 min. Such average speeds as 48-49 m.p.h. including stops are, of course, extraordinary in relation to the physical configuration of the routes concerned, as was also the maximum of 81 m.p.h. reached at the high level of the Dovre plateau, where the line is level and fairly straight. Very careful consideration of the Norwegian climatic conditions, especially in winter, is necessary before a final decision is reached in the matter, but the trials have been sufficiently promising to encourage the Norwegian State Railways to call for tenders for the construction of two diesel-electric train sets.

XUM

## Southern Railway Company

WITH the publication of the preliminary figures for the year 1938 on the announcement of the full payment of 5 per cent. on the preferred ordinary stock it was expected that one of the factors enabling this to be done would be an improvement in the net receipts from ancillary businesses. These, at £765,345, show an advance of £18,106 on 1937, towards which increase the chief contribution is one of £60,130 made by steamboats. Dock profits were £42,655 lower. Hotel profits where catering is carried on by the company were reduced by £5,035, but against that must be set an increase of £4,119 in rents from hotels. The profit on collection and delivery of parcels and goods was £13,614, an increase of £2,983, and the loss on air transport was reduced from £5,103 to £4,975. Among miscellaneous receipts the return from Carter Paterson and Hay's Wharf Cartage amounted to £35,152, a net improvement of £3,395. Railway receipts from passenger train traffic were £16,987,497 and provided an unexpected increase of £67,884 or 0·40 per cent. Although the first class ordinary and season ticket receipts of £1,504,312 were lower by £72,561 or 4·60 per cent. than in 1937 they represented 10·23 per cent. of the total receipts from passengers. The decline of £35,619 or 8·70 per cent. in second class receipts, may, in view of the heavier steamer traffic, represent a substantial transfer to third on the part of passengers to and from the Continent. Total third class receipts show an increase of £145,752 or 1·15 per cent., but £123,080 of this increase comes from seasons. Parcels and mails brought in £30,312 more.

In the goods train traffic receipts of £4,751,575 there was a fall of £179,234 or 3·60 per cent. The heaviest falls were in Classes 1-6 where the quantity conveyed was down by 612,228 tons or 26·91 per cent., and the receipts were down by £105,371 or 17·30 per cent. In higher class merchandise the decrease in quantity was 334,000 tons or 6·64 per cent., with receipts lower by £51,850 or 1·97 per cent. The commodities showing the largest decreases were building materials, grain and flour, iron and steel scrap, road making materials, and timber. Coal class tonnages were down by 241,122 tons or 2·86 per cent., and their receipts were lower by £15,434 or 0·95 per cent. Results are compared in the accompanying table:—

| | 1936 | 1937 | 1938 |
|---|---|---|---|
| | £ | £ | £ |
| Total expenditure on capital account | 169,144,332 | 171,495,577 | 173,589,283 |
| Gross receipts from businesses carried on by the company | 24,268,069 | 25,580,836 | 25,468,465 |
| Revenue expenditure on ditto | 18,994,747 | 19,963,749 | 20,427,442 |
| Net receipts of ditto | 5,273,322 | 5,617,087 | 5,041,023 |
| "J" Joint Lines—company's proportion of net revenue | *Dr.* 37,345 | *Dr.* 42,388 | *Dr.* 47,422 |
| Miscellaneous receipts (net) | 1,243,225 | 1,237,503 | 1,219,724 |
| Miscellaneous charges | 253,042 | 260,078 | 271,421 |
| Net revenue | 6,226,160 | 6,552,124 | 5,941,904 |
| Interest on loans and debenture stocks, &c. | 1,943,167 | 1,943,167 | 1,943,167 |
| Dividends on guaranteed and preference stocks | 2,751,278 | 2,751,278 | 2,751,278 |
| Balance after payment of preference dividends | 1,531,715 | 1,857,679 | 1,247,459 |
| Dividend on ordinary stocks | 1,536,781 | 1,851,684 | 1,379,330 |
| Rate per cent:— | | | |
| Preferred ordinary | 5 | 5 | 5 |
| Deferred ordinary | ½ | 1½ | — |
| Surplus or deficit (+ or —) | — 5,066 | + 5,995 | — 131,871 |
| Balance brought forward from previous year | 225,875 | 220,809 | 226,804 |
| Balance carried forward to subsequent year | 220,809 | 226,804 | 94,933 |

That considerable economies must have been effected in railway working expenditure during the second half of the year is evident from the figures. In the first half of the year the increase was £456,000, whereas for the whole year it was not more than £492,641. The increase in wages under the award of last autumn accounted for about £220,000 of the advance in expenditure during the first six months, but in the second half of 1938 the comparison was with a period in which this wage increase had been operative since August. Locomotive running and traffic expenses for the year were up £382,383, and the amounts charged to maintenance of way and works and to maintenance of rolling stock increased respectively by £61,432 and £45,577. The length of track renewed in 1938 was 186¼ miles, compared with 209 miles in 1937. Eleven steam locomotives, 81 electric motor vehicles, 31 passenger carriages, 262 other coaching vehicles, and 901 merchandise and mineral vehicles were renewed in the company's shops during the year.

* * * *

## Great Western Railway Company

THE interim announcement made last July and the continuous fall in railway traffic receipts since then had warned stockholders of the probability of a distribution on the ordinary stock considerably less than the minimum of 3 per cent. which had so long prevailed. Last Friday the dividend was announced at ½ per cent. for the whole year 1938. Dividends on the ordinary stock for the past nine years have been as follows:—

| | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 |
|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % |
| Ord. stock | 5½ | 3 | 3 | 3 | 3 | 3 | 3 | 4 | ½ |

As a consequence of this payment the senior stocks of the company although they lose the status of full trustee stocks will still be available for investment by trustees under Rules of the Supreme Court, which permit such investments in the debenture, guaranteed, and preference stocks of a railway company which has for the preceding ten years paid a dividend on its ordinary stock. The 3 per cent. giving full trustee status could not have been paid for 1938 without a heavy draft on reserves, and seeing that there is little prospect of real improvement in the near future the directors have decided to conserve their resources.

Gross receipts in respect of railway working in 1938 were £26,829,140, a decrease of £1,281,706 or 4·56 per cent. in comparison with 1937, and railway expenditure amounted to £22,192,996, an increase of £400,168 or 1·84 per cent., leaving net railway receipts of £4,636,144 which were £1,681,874 lower. Ancillary businesses brought in gross receipts of £4,210,587 which were £265,114 lower than in 1937, but the £4,196,487 expenditure on these businesses showed a reduction of £132,130, and the net receipts of £14,100 were down £132,984. It is clear that considerable economies must have been effected during the last six months of the year, as in the first half expenditure on railway and ancillary businesses had increased by £522,000. The railway operating ratio has risen from 77·52 per cent. to 82·72 per cent. The decrease in the net receipts from ancillary businesses was entirely in the docks, which lost £140,254. Steamer profits increased by £3,588, and hotels, &c., brought in £6,583 more. Miscellaneous receipts decreased by £5,019, although the dividends received from associated omnibus undertakings improved from £185,736 to £210,893, and the Carter Paterson and Hay's Wharf Cartage earnings of £35,156 showed a net increase of £3,395. Total passenger train receipts amounted to £11,454,000, a decrease of £35,143, and the total goods train receipts of £15,132,563

were £1,229,944 lower. In the first class ordinary receipts of £533,009 there was an increase of £168, although first class season receipts dropped from £92,957 to £88,870. Total first class receipts represented 7·34 per cent. of the total receipts from passengers. Ordinary third and third seasons were down, but workmen's tickets showed a small improvement, and receipts from parcels and mails (£9,984,804) were £4,308 better. On the goods side the fall in receipts was most marked under Classes 1 to 6, in which the earnings were lower by £556,016 or 21·68 per cent. on an originating tonnage lower by 27·89 per cent. Higher class merchandise receipts were down £306,335 or 4·02 per cent., with a decrease in originating tonnage of 11·24 per cent. Coal, coke, and patent fuel tons were down 9·06 per cent., with receipts lower by £333,374 or 5·63 per cent. Results for the past three years are compared in the accompanying table:—

| | 1936 £ | 1937 £ | 1938 £ |
|---|---|---|---|
| Total expenditure on capita account | 184,695,041 | 185,390,751 | 186,363,713 |
| Gross receipts from businesses carried on by the company | 30,763,033 | 32,586,547 | 31,039,727 |
| Revenue expenditure on ditto | 24,839,821 | 26,121,445 | 26,389,483 |
| Net receipts of ditto | 5,923,212 | 6,465,102 | 4,650,244 |
| "J" Joint Lines—company's proportion of net revenue | 140,887 | 145,949 | 144,318 |
| Miscellaneous receipts (net) | 1,039,222 | 1,090,562 | 1,085,543 |
| Miscellaneous charges | 788,492 | 815,108 | 836,352 |
| Net revenue | 6,314,829 | 6,886,505 | 5,043,753 |
| Rates and rate relief recoverable to December 31, 1935 | 1,737,800 | — | — |
| Appropriation to contingency fund | *Dr.*1,737,800 | — | — |
| Appropriation to new works—Railways (Agreement) Act, 1935—Revenue proportion suspense | — | *Dr.* 100,000 | — |
| Interest on loans and debenture stocks | 1,649,818 | 1,649,832 | 1,649,848 |
| Dividends on rent charge, guaranteed and preference stocks | 3,344,699 | 3,344,699 | 3,343,749 |
| Balance after payment of preference dividends | 1,320,312 | 1,791,974 | 50,156 |
| Dividend on ordinary stock | 1,287,892 | 1,717,189 | 214,649 |
| Rate per cent. | 3 | 4 | ½ |
| Surplus or deficit (+ or —) | +32,420 | +74,785 | —164,493 |
| Appropriation from contingency fund | — | — | 100,000 |
| Balance brought forward from previous year | 44,373 | 76,793 | 151,578 |
| Balance carried forward to subsequent year | 76,793 | 151,578 | 87,085 |

This table shows that although the gross receipts from railway and ancillary businesses were in 1938 higher by £276,694 than in 1936, yet expenditure between these two years has grown by as much as £1,549,662. An approximation of the main headings, in expenditure during 1938 is given in the following table:—

| | Amount £ | Amount per £ s. | d. |
|---|---|---|---|
| Salaries and wages | 18,100,000 | 11 | 8 |
| Coal | 2,020,000 | 1 | 3 |
| Other material | 3,600,000 | 2 | 4 |
| Rates and sundry items, less miscellaneous receipts | 2,300,000 | 1 | 6 |
| | 26,020,000 | 16 | 9 |
| Appropriation from reserves, &c. | 170,000 | 0 | 1 |
| | 25,850,000 | 16 | 8 |
| Interest and dividends on capital | 5,200,000 | 3 | 4 |
| | 31,050,000 | 20 | 0 |

A comparison with previous approximations indicates that salaries and wages in 1938 were £1,050,000 higher than in 1936 and £250,000 higher than in 1937. Coal cost £2,020,000 in 1938, against £1,850,000 in 1936 and £1,950,000 in 1937. Expenditure on "other material" although £400,000 more than in 1936 was £100,000 less than in 1937. Work is proceeding satisfactorily in connection with the provision of electrified lines between North Acton and Ruislip under the provisions of the London Passenger Transport (Agreement) Act, 1935, and it is hoped to open the new line as far as Greenford early in 1940. Good progress has also been made with the various schemes undertaken in accordance with the arrangements embodied in the Railways (Agreement) Act, 1935.

* * * *

## London Midland & Scottish Railway Company

AS the dividend statement foreshadowed the most striking feature of the year's results has been the astonishing reduction in working costs, notwithstanding the higher wage scales and the increase in the prices of materials. While in the early part of the year receipts continued to improve, heavy decreases were experienced in almost all sections for the remainder of the year, so that receipts from all sources for the full year 1938 showed a reduction of £3,351,000 compared with those of 1937. The higher levels of salaries and wages and the rise in the prices of materials caused an addition of about £1,400,000 to expenditure, but reductions in the volume of business and the further fructification of economies in working enabled savings of about £1,740,000 to be made, resulting in a net decrease of £340,000 in expenditure. The railway receipts of £64,212,115 were lower by £3,021,965, and the ancillary receipts of £8,240,679 were down £380,777. In the railway expenditure of £53,355,771 there was a saving of £241,902, and the expenditure of £8,293,788 on ancillary businesses was reduced by £98,147, so that the railway net receipts of £10,856,344 were £2,780,063 lower, and ancillary businesses as a whole showed a loss of £53,109, against a profit of £282,630 in 1937.

Railway passenger receipts were up £165,429, but parcels and mails brought in £83,012 less. The first class ordinary receipts of £1,449,790 showed an improvement of £50,941, but the first class season ticket receipts of £480,588 were £10,053 lower. Total first class receipts (£1,930,378) represented 9·40 per cent. of the total passenger receipts. Passengers, including season ticket holders, numbered altogether 434,224,863, a decrease of 25,321,840, and the 5 per cent. increase in fares had some effect in making an increase in receipts from all classes of ordinary passengers so that the average fare per passenger rose from 1s. 1·15d. to 1s. 2·22d. Similarly the average receipt per ton was higher in all classes of merchandise notwithstanding the heavy decreases both in tonnage and earnings in every class. In higher class merchandise the decreases were 3,597,191 tons and £1,660,450. The quantity of minerals and merchandise (Classes 1—6) conveyed was 5,530,821 tons smaller, and the receipts therefrom were £1,102,347 lower. Coal class tonnage was down 5,880,436, with receipts £324,695 lower.

Among ancillary businesses road transport net receipts were down £1,239, and the steamboat net receipts of £206,679 were £97,608 lower. Profits from hotels, refreshment rooms, and cars were £330,911, a reduction of £22,098. The loss on collection and delivery of parcels and goods was increased by £109,280, but the losses on canals and on air transport were reduced by £4,907 and £3,023, respectively. The working of docks, harbours, and wharves resulted in a loss of £25,088, comparing with

a profit in 1937 of £35,247. The company's share of net receipts from " J." Joint Lines increased from £154,509 to £290,555, the greater part of the improvement being due to rate relief adjustments. The best returns were those of £124,503 from the Cheshire Lines and of £94,370 from the Manchester South Junction & Altrincham, against £87,553 and £42,555, respectively, in 1937. Miscellaneous receipts (net) were £31,628 lower. Dividends from associated bus undertakings were £346,525, an improvement of £33,850. There was a loss of £4,726 on the Northern Counties Railway (Ireland), against a profit of £2,374 in 1937. The accompanying table compares results for the past three years:—

| | 1936 £ | 1937 £ | 1938 £ |
|---|---|---|---|
| Total expenditure on capital account | 454,444,204 | 456,684,343 | 459,285,651 |
| Gross receipts from businesses carried on by the company | 72,718,669 | 75,855,536 | 72,452,794 |
| Revenue expenditure on ditto | 59,159,138 | 61,989,608 | 61,649,559 |
| Net receipts of ditto | 13,559,531 | 13,865,928 | 10,803,235 |
| " J " Joint Lines—company's proportion of net revenue | 104,596 | 154,509 | 290,555 |
| Miscellaneous receipts (net) | 2,158,438 | 2,149,900 | 2,118,272 |
| Miscellaneous charges | 1,774,389 | 1,814,061 | 1,866,542 |
| Net revenue | 14,048,176 | 14,356,276 | 11,345,520 |
| Rates and rate relief recoverable, years 1931–1934 | 3,180,000 | — | — |
| Appropriation to contingency fund | *Dr.* 3,180,000 | — | — |
| Interest on debenture stocks | 4,439,170 | 4,439,170 | 4,439,170 |
| Dividends on guaranteed and preference stocks | 8,474,383 | 8,474,383 | 6,869,024 |
| Balance after payment of preference dividends | 1,134,623 | 1,442,723 | 37,326 |
| Dividend on ordinary stock | 1,190,031 | 1,428,037 | — |
| Rate per cent. | 1½ | 1½ | Nil |
| Surplus (+) or deficit (—) | — 55,408 | + 14,686 | + 37,326 |
| Balance brought forward from previous year | 134,491 | 79,083 | 93,769 |
| Balance carried forward to subsequent year | 79,083 | 93,769 | 131,095 |

Total engine miles in 1938 were 228,333,168, against 234,960,728 in 1937, and total engine hours decreased from 26,974,706 to 25,218,113. The railway operating ratio was 83·09 per cent. in 1938 compared with 79·72 per cent. in 1937. The amount charged to maintenance of way and works was £734 less, and to maintenance of rolling stock was £75,859 less. Locomotive running expenses advanced by £61,827 and traffic expenses by £1,018. Under general charges there was a reduction of £200,503, partly in office expenses, but mainly under superannuation and benevolent funds, pensions, &c. During 1938, 659 miles of running lines were completely renewed, and on this and other track maintenance, 99,358 tons of new rails and 1,667,714 new sleepers were used. The company now possesses 7,644 locomotives, 279 rail motor vehicles, 23,541 coaching vehicles, 285,611 merchandise and mineral vehicles, and 14,508 service vehicles.

* * * *

## How Taxation Handicaps London Transport

IN the six years since its formation, the London Passenger Transport Board has had to contend with the enormous burden of gradually rising national and local taxation. In the fifth financial year of the board, taxation swallowed up £2,770,000, of which 74 per cent. represented licensed vehicle duty and fuel duty. Every omnibus running in Central London costs the board, on an average, £325 annually in taxes, of which three-quarters consist of fuel duty (now 9d. a gallon). Assuming that taxation is intended to be punitive, it seems anomalous that it should so hit road services which transport the business-bound rather than the pleasure-bound Londoner. These facts are revealed in one of the London Transport advertisements telling the public about the problems and achievements of the board. With these advertisements and with the explanatory hoardings erected at new constructional sites, the board may be said to have begun a new kind of relationship between transport management and the travelling public.

* * * *

## Dock De-Rating Rebates

UNDER the provisions of the Local Government Act, 1929, relief from the payment of 75 per cent. of the local rates on their dock undertakings was afforded the railway companies on the understanding that a similar sum, as nearly as may be, was passed on to the users of the docks by way of reductions from the dock charges. Consequent upon the reduced assessments of the dock undertakings made by the Railway Assessment Authority under the Railways (Valuation for Rating) Act, 1930, for the first quinquennial period which ended in 1936, revealing that the companies had made considerable overpayments of rebates, it was necessary to reduce substantially the scale of rebates applicable as from January 1, 1937. The provisional figures for the second quinquennial valuation of railway dock property issued by the Railway Assessment Authority in respect of the Great Western Railway show a further reduction in the assessments and, in consequence, a smaller sum will be available for rebates. The G.W.R. therefore announced on February 15 that as from March 1 next the dock de-rating rebate will be reduced from ¼d. to ⅛d. a ton on coal, coke, and patent fuel exported from its ports as cargo or bunkers to foreign destinations, and to Ireland, the Isle of Man, and the Channel Islands, also for bunkers for fishing vessels. The additional allowance of ¼d. a ton hitherto made in respect of these traffics when shipped from fully loaded 20-ton wagons will, however, remain unaltered. It is understood that the position of the L.M.S.R. and L.N.E.R. de-rating funds also necessitates some modification of the rebates, and both companies propose as from March 1 to reduce the rebate on coal, coke, and patent fuel shipped to the destinations mentioned above, from ¼d. to ⅛d. a ton. In the case of the L.N.E.R., the rebate on iron and steel traffic in classes 5 to 10 exported to the same places will also be reduced from 4d. to 2d. a ton.

* * * *

## Signal Patent Litigation

LITIGATION of considerable interest regarding a railway signal patent resulted in the judgment given on February 1 by Mr. Justice Morton in the Chancery Division of the High Court of Justice, of which we publish a précis on page 279. Fundamentally no new question of legal principle was established, for the subject matter came within the principle stated as long ago as March, 1894, by Mr. Justice Romer, as he then was, in Nobel's Explosives Co. Ltd. *v.* Anderson (Reports of Patent Cases, Vol. 11, page 115, at page 128, line 2), as follows: " In order to make out infringement, it must be established that the alleged infringer, dealing with what he is doing as a matter of substance, is taking the invention claimed; not the invention which the patentee might have claimed if he had been well advised or bolder, but that which he has in fact and substance claimed on a fair construction." It was upon this basis that Mr. Justice Morton decided that the present action of the General Railway Signal Co. Ltd.,

against the Westinghouse Brake & Signal Co. Ltd., failed. An unusual feature of the hearing was the fact that Dr. D. M. Robinson sat with the judge as electrical assessor.

One legal sidelight worthy of remark, however, was provided by His Lordship's observations on the operation of Orders giving directions under sub-clause 2 (*b*) of Order 53A, Rule 21A, which provides for the delivery of statements signed by counsel setting out all the contentions whether of fact or law (including contentions as to the construction of the specifications or other documents) upon which the parties respectively intend to rely. The plaintiff company issued the writ in this action on September 17, 1935, claiming damages for infringement of its patent No. 268,822, of August 6, 1925, and an injunction. On July 29, 1936, the first Order giving directions under Order 53A, rule 21A was made. On June 22, 1937, a second Order was made giving directions under Order 53A, rule 21A. This Order directed (*inter alia*) the delivery by the plaintiff and the defendant respectively, of certain statements signed by counsel. These directions were given under sub-clause (*b*) of Rule 21A (2). On March 21, 1938, the plaintiff company applied by motion for liberty to amend its complete specification and on March 25, 1938, Mr. Justice Simonds made an Order giving the plaintiff liberty, on certain undertakings, to proceed with the application for leave to amend, and directed that the application should be made on oral evidence and should come on with the trial of the action. As sub-clause 2 (*b*) of Order 53A, rule 21A, is a new sub-clause, Mr. Justice Morton said he thought it might be helpful if he made some comments as to the result which had been produced in the present case by the directions which had been given under this sub-clause. These directions, he said, had served a very useful purpose; they had clarified and limited the issues, and had thereby caused a reduction in the length of the trial. Although the hearing of this case had necessarily been very protracted, he felt sure that it would have lasted many more days if these statements had not been delivered.

He thought, however, that the power to order delivery of such statements was one which should be exercised with some caution. It was obvious that the preparation of such statements, which in many cases would involve the employment of experts to assist counsel, must add, and sometimes add considerably, to the costs incurred prior to the hearing. In the present case he had no doubt that the total costs incurred would have been much greater if these statements had not been delivered, as the case was one of great complexity. The legal advisers of the parties, and the experts whom they consulted, had shown a wise discretion in endeavouring, by means of these statements, and by means of certain agreements made before the trial, to concentrate the attention of the Court upon what was really essential. But he could imagine cases of a simpler character in which any saving of costs at the trial might be exceeded by the preliminary costs incurred in preparing these statements. Incidentally, his Lordship gave costs in the present action in favour of the defendant company on the higher scale, and these may be estimated to amount to a sum between £50,000 and £60,000. A point in patent law arose out of the fact that, in the course of his opening for the plaintiff company, Mr. Lionel F. Heald, K.C., mentioned certain further amendments of the specification which his clients desired to make, and he asked the judge to allow these further amendments, in addition to the amendments mentioned in the Notice of Motion of March 21, 1938. Mr. Justice Morton said he did not doubt that the Court had power, under Section 22 of the Patents and Designs Acts, 1907 to 1932, to allow further amendments put forward at the hearing, and quoted a recent case in which this power was exercised.

## Screen-Wipers for Locomotives

WHEN, arising out of the fatal accident to a driver on the Southern Railway, Sir Walter Alcock recently wrote to *The Times* on the subject of screen-wipers for locomotives, he did so as a non-professional, albeit a keen observer of railway practice, concerned for the welfare of locomotive enginemen in whom he is known to take a great interest. The letter, which dealt with a matter of considerable importance, was replied to through the same medium by Mr. C. Grasemann, Public Relations and Advertising Officer of the Southern Railway, who pointed out that in the particular instance referred to the accident could not have been prevented by the fitting of a screen-wiper, inasmuch as the unfortunate driver lost his life, not in looking out for signals, as had been assumed, but as a consequence of disobeying a definite rule which prohibits enginemen going on to the tender of an engine in motion. On this occasion the enginemen were in doubt as to the quantity of water still remaining, and the driver climbed over the coals in the tender while the train was in motion, and was struck by the bridge and killed instantly. There have, unfortunately, been numerous cases of the kind, and many of them, especially those caused by leaning out of the cab, would have been avoided if only the victim had taken what might appear to be the simple precaution of facing in the direction in which the locomotive was travelling instead of in the opposite direction.

This, however, does not affect the point raised in the original communication to *The Times*, and the question as to whether the safety and lives of locomotive drivers and firemen would be protected more adequately by fitting screen-wipers to the cab windows may still be regarded as open to discussion. At various times we ourselves have raised the point with the heads of railway locomotive departments, Chief Mechanical Engineers, and Running Superintendents, and also with locomotive inspectors and drivers. The consensus of opinion among those consulted seems to be against the use of fitments of the kind referred to, and strongly in favour of using hinged side screens or glass "wings" standing out at right angles to the side of the cab through which the driver can get a good view ahead without risk of discomfort, safety glass being used. These were first introduced in this country, on the L.N.E.R., in 1928, and are nowadays fitted as a standard to many express and other locomotives on that line and the L.M.S.R., and also in less degree by some other companies; they are efficacious and reliable in use and can be easily cleaned by hand as becomes necessary. In addition, the windows in the cab-front of most modern engines are hinged and can be opened as desired for cleaning purposes.

Screen-wipers of the types fitted to road motor vehicles and operated by hand, suction, and nowadays almost universally by electrical means, suffice for their purpose except when heavy snow or ice is encountered, but experiments carried out on locomotives in this country have proved that it is very difficult or impossible to remove the dirt and other deposits that get on the cab windows of an engine with a wiper, even a very large and powerful one. It has been found that enormous pressure is needed in order to remove the foreign matter that accumulates and, in addition, some of the screen-wipers tried failed to stand up to the vibration entailed. Such fitments have, it is true, been applied to locomotives on certain Continental railways, but with what degree of success is not known. In many cases the cab windows are there provided with hooded extensions which, apart from shielding the drivers from the glare of the sun, are, we believe, claimed to assist matters by helping to keep the windows

XUM

clean. An ingenious system, fitted to a considerable number of locomotives in France, is the Pottier clear cab outlook, in which a series of aerodynamic deflectors is arranged in front of the cab to deflect the draught of air and enable the driver to look ahead with nothing between him and his line of vision. Interviewed subsequently by the Press Association, Sir Walter Alcock is reported as saying that he knew a screen-wiper had been invented capable of squirting hot water on to the cab windows and simultaneously wiping away the obstructions and dullness caused by smoke, grit, and grease. In point of fact this system, taking hot water from the exhaust steam injector, is already being used on the Southern Railway, and is, we understand, proving successful.

# LETTERS TO THE EDITOR

*(The Editor is not responsible for the opinions of correspondents)*

## Exeter in 4½ Hours in 1849

Lillycombe,
Porlock, Somerset
February 13

To the Editor of The Railway Gazette

Sir,—In the paragraph " Speed and the Swindon Refreshment Room " on page 211 of last week's issue, you still do a slight injustice to the G.W.R. by inferring that the 4½-hr. run to Exeter ceased at the end of November, 1847. As a matter of fact it was then accelerated by 5 min., Bristol being reached in the even 2½ hr. until a stop at Chippenham was added in October, 1848. The 4½ hr. to and from Exeter lasted till May, 1849, when the Bristol & Exeter Railway Company began to work its own line and added two more stops in each direction. It is interesting to note, incidentally, that more than forty years elapsed before Bristol was again brought within 2½ hr. of London.

Yours faithfully,

E. T. MACDERMOT

## The Square Deal Campaign

37, Rodway Road,
Bromley, Kent
February 6

To the Editor of The Railway Gazette

Sir,—With reference to correspondence in your issue of January 27, the position is even worse than Messrs. Adams, Johnston, & Watkin indicate: " . . . broadly speaking, fast services to and from London are good." Of the towns (about 30) situated 80—125 (about 100) miles from London and having populations in excess of 20,000 only one has (or had when I amused myself compiling the table) a fast breakfast car train arriving not later than 9.45 to 10 a.m. (at works), being always the time I and other members of a consultant's staff were requested to start when sent out on a job.

" . . . electric services, the S.R. seems to have appreciated regular frequent local services." The trains are punctual and reasonably frequent, but the services are not regular, for the timetable alters at rush hours and to a lesser extent on Sundays, and are different again in fog, though still punctual! In the rush hours all connections appear to be spoiled, leading to such absurdities as 3 hours from Leatherhead to Bromley (by actual test, timetable time probably 1¼—1½ hours, private vehicle time, 1 hour).

Another absurdity is an important fog train here leaving 5 min. before the regular time with no notification whatever at the stations, I only noticed it because it passes the end of my garden. At the next station up the line, centre of an enormous population, no alternative station nearer than 20 min., there are four trains each way per hour, but only a half-hourly service. Why cannot we have a standard basic service of trains running at the same min. past each hour, rush hours and slack hours, weekdays and Sundays, and, with the aid of modern signalling, in fog? Extra trains in clear weather rush hours should be really extra, absolutely not interfering with the standard service, but preferably leaving just before the standard trains and either (1) running half-way down the line and returning at once for a fresh load, or (2) running non-stop over the first half of the line. This seems to me to be the only way to catch the most valuable class of passenger, the casual, full fare, off peak.

In another letter in the same issue, Sir W. V. Wood, of the L.M.S., asserts that the railways do try to meet their customers' requirements. Well, during the nine years (up to the time when I abandoned public transport altogether), I had a season ticket on the L.M.S., I was asked for my country address, but never for my town address, and no attempt whatever was made to ascertain which London station I would prefer to use, the result was that I had the mortification of seeing the last uncrowded and punctual train run by my pick-up station and had to wait for a slower one arriving 30 min. later (perhaps !) usually standing room only in the first class. On that particular line I would make a good guess that, despite a partial electrification costing *n* millions, the service between my (old) home and works is worse than it was in 1917.

Lord Stamp and his men have done some wonderful research at Derby and elsewhere *re* inanimate things, why not apply similar methods to their customers, actual *and prospective*?

Yours faithfully,

B. M. VENABLES

[We are glad to publish our contributor's appreciation of the " regular frequent local services " of the Southern Railway and their punctual running. A standard basic service is certainly a most worthy ideal, but it does not at all times fit in with the traffic requiring to be handled. In rush hour periods, when provision has to be made for passengers from many points, not only in the suburban area, but from a considerable distance outside, requiring to get to London at certain times, the even time scheme is bound to suffer interference. With regard to Sundays, not only does the traffic not justify the same service as on weekdays, but there is also a difference in the directional flow of traffic which militates against the weekday and Sunday service being on a common basis. Regarding the journey from Leatherhead to Bromley, the traffic between these points is negligible, but there are four routes by which the journey can be covered in approximately 1¼ hours. Under conditions of dense fog, it is impossible for the standard service to be maintained over every section of the railways. Regarding the L.M.S.R. service, when our correspondent applied for his season ticket he must have stated to which London station he desired to travel, otherwise he could not have been given a ticket. In the absence of details of the service to which he refers it is not possible to make any comment. It is the practice of the L.M.S.R. to apply commercial research methods.—Ed. *R.G.*]

## G.E.R. Revised Train Service of 1914

70, Antrim Mansions, N.W.3
February 13

To the Editor of The Railway Gazette

Sir,—I have to thank Mr. Mauldin for his courteous reply. I note his disapproval of the " Thornton " timetable and would ask in lieu if we might return to the pre-Thornton timetables which with the following exceptions were faster and better than the existing one. The exceptions (which of course should be retained) are the up and down London—Cambridge—Bury—Ipswich; the up and down East Anglian; the new morning up Norwich; and the two fast up Clacton together with the one fast down Clacton trains. These exceptions were adumbrated in the " Thornton " timetables but at a lower speed.

Yours faithfully,

J. L. B. SAMS

# PUBLICATIONS RECEIVED

**J. F. Sutherland's First Aid to Injured and Sick.** Edited by Halliday Sutherland, M.D. Edinburgh: E. & S. Livingstone, 16/17, Teviot Place, Edinburgh. 4¼ in. × 2¾ in. 64 pp. Illustrated. Paper covers. Price 6d. net, 7d. post free.—When an accident occurs or when someone is taken ill in the street, sympathisers are not lacking, but for the most part they cannot help by reason of their ignorance of first aid. In the oldest story of first aid by the wayside, the good Samaritan had both compassion and knowledge, for he went to the injured man "and bound up his wounds, pouring in oil and wine, and set him on his own beast, and brought him to an inn, and took care of him." First published in 1887, this booklet aimed to give a concise and clear account of first aid to the injured and sick in a volume that could be carried in the waistcoat pocket. This, the 40th edition, like the others, has been revised and enlarged, and includes first aid in air raid and gas warfare.

**A Short History of the Steam Engine.** By H. W. Dickinson. Cambridge University Press, Cambridge, and 200, Euston Road, London, N.W.1. 9¾ in. × 6 in. × 1 in. 255 pp. + XVI pp. Illustrated. Price 15s. net.—For some years past Mr. Dickinson has given us at the rate of one a year fascinating volumes on engineering historical subjects, written with the freshness of enthusiasm aided by the vast store of knowledge acquired during more than 30 years of study while he was an official of the Science Museum, South Kensington. By "engine" the author, of course, means a stationary power plant and not a locomotive engine, and in this book both the marine engine and the locomotive have been touched upon only up to the point where they branch off from the parent stem and begin their independent careers. Mr. Dickinson observes that the steam engine was never so important in the world's economy as it is today, and quotes recent figures to show that 62·8 per cent. of the world's electrical supply is derived from fuel operated plants; 35·4 per cent. from hydro-electric plants; and 1·8 per cent. from internal-combustion-engine plants.

In his preface the author expresses the hope that he may be able to clear away some oft-repeated errors. The production of his volume certainly reduces any conceivable excuse for such errors, but we fear that he is too optimistic in expecting to uproot popular fallacies. Mr. Dickinson adopts a modern conception of power when he says that the heat engine is undoubtedly the most potent agent in bringing about "the material well-being that everyone shares, or ought to share, today." With this thought in mind, he not only traces the development of heat engines, but also shows why they were not generally adopted until comparatively recent years. Both illustrations and text (equally well documented) bear evidence of exhaustive and painstaking research, and *A Short History of the Steam Engine* is a worthy addition to the series of books for which its author is justly famed.

**German Travel Literature.**—We have received from the German State Railway a selection of travel literature printed in English. "Winter in Germany" stresses the attraction of Germany as a winter sports country. The *Anschluss* with Austria and the inclusion of the Sudetenland have added to Germany extensive areas of beautiful mountain districts—vieing with the well-known Bavarian Alps, the Black Forest, and the Harz Mountains, all of which are here described. A companion booklet forms a diary of events of the 1938-1939 winter sports season. "Tirol" describes that wonderful area which divides Germany and Italy and has its centre at Innsbruck. The four other publications are respectively "Munich," a series of illustrations of the birthplace of National Socialism; a list of hotel accommodation in the Bavarian capital; "Visiting the Rhine" a folder giving details of the Rhine steamer services; and a booklet devoted to the 60 per cent. reduction in fares available on the Reichsbahn.

**En Belgique.**—We have received from the Belgian Railways and Marine a copy of the January issue of *En Belgique*, a bi-monthly brochure written in French and devoted to Belgian tourism and the sights and attractions of the country. In this particular issue, the traveller is invited to sample the gastronomic delights of the "Reveillon," as much a feast in Belgium as in France, and to the menu of which every part of the country contributes its share. There is a list of the principal museums as well as of the important exhibitions at Brussels, Liège, and elsewhere. The brochure concludes with a summary of the attractions current in the provincial towns, followed by a list of sporting fixtures in Belgium.

**The Grand Tours of Europe.**—We have received from Thos. Cook & Son Ltd. an attractively designed programme with the above title, in which are described four Grand Tours of Europe, the Italian, the Central European, the Scandinavian, and the French. Seeing Europe by means of one of these tours, one is assured of the advantage of comfortable travel and excellent hotels and meals. As the organisers claim, "there is nothing cheap (except the price) about these Grand Tours." An interesting feature of both the Italian and Central European tours is that they are made by special train over routes the scenic attractions of which leave little to be desired. Tourists, relieved of all the little worries sometimes incidental to travel abroad, have their time free to enjoy the tours. The programme includes a number of clever sketches from the pen of Helen McKie.

**"Concerning Callender's."**—The 1939 issue of this publication of Callender's Cable & Construction Co. Ltd. contains an account of the life and work of the late Sir Tom Callender, M.I.E.E., Managing Director and Chairman of the firm, who died on December 2 last. In in the words of the booklet, ". . . his name will ever be included among the pioneers of British industry as one who not only had vision but courage and business acumen in a high degree." The other pages are taken up with details and illustrations of the company's recent cable installations at home and abroad.

**"The Super Steel."**—With this sub-title the English Steel Corporation Limited, of Vickers Works, Sheffield, introduces a catalogue dealing with the properties of Vibrac steel. Vibrac is a nickel chrome molybdenum material with a high true elastic limit, high maximum stress combined with good elongation and reduction of area, and a consistently high impact value. It was adopted for the coupling and connecting rods of the L.M.S.R. "Princess Coronation" streamlined 4-6-2 locomotives. Other engineering applications enumerated in the catalogue are internal-combustion engine crankshafts, change-speed gears of machine tools, motor vehicle back axles, and lead extrusion press parts. Notes on forging, heat-treatment, and machining Vibrac steel are included in the catalogue.

**Dovetail Sheets in Buildings.**—The British Steelwork Association, of Steel House, Tothill Street, Westminster, S.W.1, has issued an information booklet, in which is illustrated a number of the many applications of dovetail steel sheeting for building purposes. This form of sheeting has been in use for many years, but its advantages in building construction are only now being realised. The dovetail-section corrugations, being undercut, provide on both sides a perfect key to concrete or plaster and also give the sheet rigidity in one direction and relative flexibility in the other. The sheets in themselves have great structural strength, and, since they can be used for either straight or curved work and form a monolithic structure with their rendering, they enable a great variety of everyday building work to be carried out rapidly and economically. The applications illustrated include ceilings, floors, single and cavity partitions, curved work in flats, cinemas, and theatres, cellular and floating floors, stairs and landings, enclosures for lift shafts, beam encasements, and exterior walls. This sheeting is made in any gauge from No. 14 to No. 30 B.G. Further information and advice can be obtained from the association.

XUM

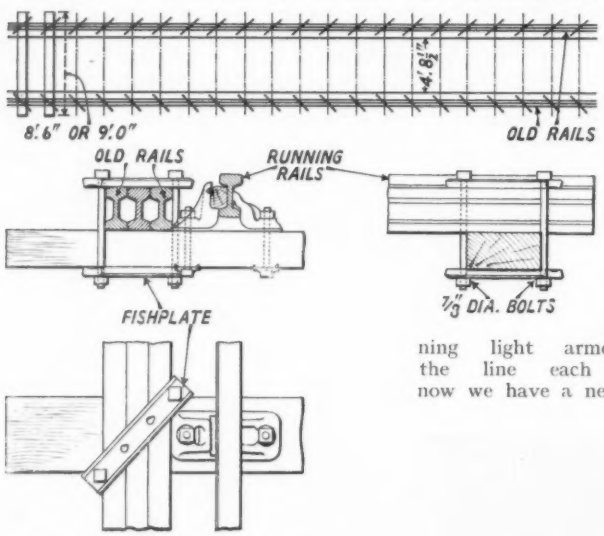
# THE SCRAP HEAP

SOVIET WOMEN ENGINE DRIVERS

A report from Dniepropetrovsk says that 23 Soviet women have passed through their course of training as engine drivers on the Stalinsk Railway, and that they will at first be given jobs as assistant engine drivers on that line. The movement for women to become engine drivers was initiated by Zinaida Troitskaya, who, in November last, was appointed Chief of the Moscow Circular Railway. In response to her appeal hundreds of Soviet women made application to enter for the course of training in engine driving organised by most of the railways of the U.S.S.R. The 23 women referred to above are some of the first fruits of Miss Troitskaya's initiative.

* * *

The " rail glands " reported in our issue of December 23 as having been applied to the G.W.R. line near Burngullow to strengthen it while a subsidence was being made good, were not,




*Rail glands temporarily fixed to the track to strengthen it*

as has been suggested, an invention of our own or of our printers. This term is used by the G.W.R. engineers to denote the practice of strengthening temporarily a section of track by strapping old rails to the sleepers in the manner shown in the sketch. We have no information whether " gland " was chosen because the device increases the expectation of life both of the permanent way so treated and of the passengers who pass over it.

* * *

We are used to seeing excavators grubbing up whole tracts of countryside, but we have never heard before of one making such a clean sweep—and in a way its designer never intended it should— as happened recently at Unna, Westphalia. It was being carried along on a goods train, when, owing to the brake mechanism becoming disengaged, its arm and jaws suddenly swung out over the side of the truck. For over a mile, until the train was stopped, it went along in this position, leaving a trail of broken telegraph poles, demolished brickwork, a partly-wrecked station and destroyed tramway standards. Fortunately, however, as the accident happened at night no lives were lost.

* * *

The guerillas cannot recapture the large cities, but by relentless attrition they hope to wear down Japanese power in a prolonged war. In one village I met two dignified former professors of Christian universities in Peiping, who are now organising train wrecks, imitating Lawrence's methods in Arabia. They had just returned from a " very successful " expedition in which a Japanese military train and 20 soldiers were the victims. When lacking dynamite to derail trains, the professors taught the guerillas to pull up the inner rail spikes, especially on curves, so that the tracks would spread when a heavy locomotive passed over. To spot the points tampered with, the Japanese began running light armoured cars over the line each morning. " So now we have a new trick," said one of the former professors, fishing from his pocket a dummy rail spike made of wood. When these are used it is almost impossible for the Japanese to discover that the real spikes are gone. This trick accounted for 30 derailments south of Peiping in three months.—*Condensed from " Associated Press Correspondence " in " The Reader's Digest " of January*, 1939.

* * *

A VERITABLE SCRAP HEAP

Two locomotives sent recently from opposite directions to investigate a breakdown in telegraphic communications, crashed head-on at a point 400 miles from Calcutta. A press message states that seven railwaymen were killed and three injured. Owing to the breakdown it was impossible to warn the engine crews of each other's approach.

* * *

*The Times* published in its issue of February 9 a suggestion from Captain A. C. Winter that locomotive drivers should control their engines from the front and not the rear end. There is, as the saying goes, " No smoke without a fire," and, it may be added, no smokebox without a firebox, and in America some years back the problem was solved by placing the driver as well as the boiler between the two. As may readily be believed, with the cab located amidships, often with a dome on each side of it—the " D(r)omedary " class?—warmth as well as improved visibility was assured. To America also, as well as Italy, belongs the credit of anticipating Captain Winter's proposal in main-line steam locomotive practice, whilst this and other countries can boast of having much the same arrangement in use on steam-operated push-and-pull trains engaged in local services.

*Engine of the Southern Pacific RR. with cab for both driver and fireman at " front " end*

# OVERSEAS RAILWAY AFFAIRS

*(From our special correspondents)*

## SOUTH AFRICA

### Rand New Works

The change-over at Jeppe (Johannesburg) due to the lowering of the line between Ellis Park and George Goch, took place on Sunday, January 15. During the previous week four sets of rails were connected up at Ellis Park and near George Goch with the existing lines. The level crossings at Commissioner Street and Marshall Street have been removed and the trains now cross through the original tramway subway while the trams run overhead on a new steel bridge. The abandoned line between Ellis Park and George Goch will be converted into a boulevard, and, by the middle of the year, a new road will be ready to carry road traffic unhampered from east to west through one of the busiest areas of Johannesburg. The new station at Jeppe, which was opened on the same day, is one of the finest suburban stations in the country.

Good progress is being made with other new works along the Reef. The new double line being laid from Germiston to Jupiter includes a bridge to carry the main lines over the new line near Driehoek, and a bridge on the Main Reef Road. At Luipaardsvlei work is proceeding on the new station and the Main Reef Road subway. Krugersdorp yard is being remodelled and the line deviated to West Rand. There will be a subway at Krugersdorp station and an overhead bridge near West Rand station. The doubling of the line from Langlaagte to Midway is almost completed. From Jeppe to President station a fifth track has been laid and several of the stations remodelled. At President Street, Germiston, a subway will replace the present level crossing. The largest scheme at Germiston includes the alterations to the yard and the building of flyover bridges. The excavations for the new down yards are well advanced and work is proceeding on the earthworks for connections to the new Pretoria lines and shunting tracks. The new goods and marshalling yard at Prospect township is expected to be ready in 1941.

### Report of Controller and Auditor General

The audited figures for the year ended March 31, 1938, show that the operating expenses increased by £2,625,059 or 12·75 per cent. as compared with the previous year, and the revenue increased by £1,495,982 or 4·69 per cent. The operating ratio was 69·54 per cent. compared with 64·57 per cent. the previous year. The profit on road motor services was £26,122 compared with £45,370 in 1936-37. Of the 106 area services, 65 showed a profit aggregating £57,073, the remaining 41 services showed a loss of £30,648, and a further loss of £303 was incurred on surplus vehicles account. On grain elevator working there was a profit of £126,552 compared with a loss of £115,440 in 1936-37. The aggregate loss on working since the opening of the elevators is £426,856. The net profit on publicity, bookstalls, advertising and automatic machines was £20,587, a decrease of £1,630. The loss on catering services was £13,924 as compared with a profit of £165 the previous year. The profit on bedding services decreased from £16,456 to £8,550. From July 1, 1937, the charge for *de luxe* beds, comprising the standard bedding with an additional mattress was reduced from 7s. 6d. to 6s.; the charge for mattresses which are available for hire separately, being reduced from 4s. to 3s. each. During the year 17,806 mattresses were issued to passengers as compared with 9,088 in 1936-37, yielding a revenue of £2,885 per annum.

## BRAZIL

### Engineering and Railway Legislation Congress

The Second Engineering and Railway Legislation Congress, promoted by the Brazilian Association of Railway Engineers, took place at Curityba in the State of Paraná between October 12 and 16 last. The opening ceremony was presided over by the Federal Interventor, assisted by the Archbishop of Curityba, Generals Almerio de Mouro and Manoel Rabello, and Engineers Joaquim Licinio de Almeida and Arthur Pereira de Castilho, Federal Inspector and Chief of the Federal Inspectorate of Railways respectively.

The congress was divided into four sections; the first, under the presidency of Engineer Oscar Teixeira Guimarães, Chief Permanent Way Engineer of the North-Western Railway, dealt with permanent way and works and discussed *inter alia* the influence of the location of a railway on its own economy and that of the region served. Arising from this discussion, the advantages to be gained by the realignment and regrading of existing lines, with due regard to economic factors and national interests, were debated, also the careful study of the question of gauge commensurate with the traffic expectations or capacity of each line; and the advantages of electric traction. This section also dealt with a contribution from Engineer Luiz Feijó Bittencourt on the rationalisation of all permanent way maintenance works. Engineer Rubem Vaz Toller presented a thesis on centralised traffic control, and Engineer Moacyr Teixeira da Silva read a paper on the economics of the electrification of the Central Railway of Brazil.

Section No. 2, under the presidency of José Wilson Coelho de Souza, Locomotive Superintendent of the Mogyana Railway, discussed a thesis by Engineer Pedro Italo Dalle Ore, on Brazilian fuels, and Engineer Antonio da Costa Ribeiro reviewed the question of national coal; both theses aroused extraordinary interest by the importance of the questions involved. A paper on traction and workshop practice was presented by Engineer Mario Augusto Seraphim da Silva, and Engineer Carlos F. Long put forward various considerations on the economic maintenance of the diesel engine. A paper on the rejuvenation of locomotives, by the President of the section, and read by D. Thomaz da Camara, was greatly appreciated and received special mention when the Minister of Transport reviewed the work done at the congress.

The third section, presided over by Engineer Feliciano de Souza Aguiar, Commercial Agent, Leopoldina Railway, handled all questions dealing with traffic and co-ordination of transport, and the first paper was read by Engineer Paulo Albert Rodrigues, and dealt with the economic problem of transport governed by a law defined by Agnesi's sinuous curve. Passenger transport by railways between Rio de Janeiro and Porto Alegre, and the use of funds for the renovation of railways, were also discussed.

Section No. 4 dealt with administration and legislation under the presidency of Engineer Arthur Pereira de Castilho. General Mendonça Lima, Minister of Transport, presided at the closing ceremony.

In the intervals of the various sessions, and after the conclusion of the congress, visits were paid to the gold mines in the neighbourhood of Curityba and to the workshops of the Rêde de Viação Paraná—Santa Catharina. Excursions were also made from Paranaguá to Curityba and from S. Francisco to Porto União to see the notable engineering feats on this railway across the Serra do Mar.

## ARGENTINA

### Engineering Meetings

At the 20th annual meeting of the Argentine Centre of the Institution of Electrical Engineers at Buenos Aires on December 9, Mr. C. G. Parker, Chairman of the centre, presiding, the following committee was elected for 1939 :—Corporate members : Messrs. E. Berry, B. G. Borissow, K. N. Eckhard, G. W. Munday, R. G. Parrott and W. E. Tremain; Non-corporate : Messrs. C. T. T. Comber, A. P. Gunston and D. H. Nye. The meeting was followed by the annual dinner, at which Mr. Parker presided.

The 11th annual meeting of the Buenos Aires Association of the Institution of Civil Engineers was held on December 15. The Chairman of the Associa-

XUM

tion, Mr. W. R. J. Murray, M.Inst.C.E., Stores Superintendent, B.A.G.S. and B.A.W.R., presided, and the following committee was elected for 1939 :—

Chairman : Mr. J. F. Main ; Vice-Chairmen : Messrs. H. A. McGillicuddy, M. F. Ryan, C.B.E., T. C. S. Haslam and F. W. Butler ; Hon. Secretary : Mr. H. W. Stevens ; Hon. Treasurer : Mr. T. C. S. Haslam ; Asst. Hon. Treasurer : Mr. E. N. R. Bufil ; Members : Messrs. J. R. S. Fox, G. H. Austin, H. L. Stevens, H. W. Stevens, and I. R. S. MacLean. Representative in Uruguay : Mr. D. G. MacCormack.

Mr. F. Campbell, Chairman of the South American Centre of the Institution of Locomotive Engineers, presided at the annual meeting in Buenos Aires on December 16, when the following committee for the ensuing year was elected :—

Chairman : Mr. F. Campbell ; Vice-Chairman : Mr. J. Mailer ; Hon. Secretary : Mr. M. D. Lowndes ; Hon. Treasurer : Mr. W. Squire ; Members : Major R. K. Hubbard, O.B.E. (C.A.R.), Messrs. T. J. Dunford (B.A.G.S.R.), F. J. Pinto (B.A.W.R.), E. J. Beckwith (B.A.P.R.), J. Cook (Entre Rios & A.N.E.R.), P. C. Dewhurst (Central Uruguay Railway), P. W. Dobson (Midland of Uruguay) ; commercial representatives : Messrs. W. F. Nixon and E. C. Noble.

After the general meeting a paper on "The Caprotti Valve Gear for Locomotives" was read by Mr. A. H. Davis. Mr. R. H. Parker, representative of Caprotti Valve Gears Limited, who was visiting Buenos Aires, addressed the meeting and replied to a number of questions on the subject.

The annual meeting of the Buenos Aires Association of the Institution of Railway Signal Engineers was held on November 30 at the English Club. The Vice-Chairman, Mr. F. C. Foulsham, presided, and presented the report on the work of the past session. The following committee was elected for the ensuing year :—

Chairman : Mr. F. C. Foulsham ; Vice-Chairman : Mr. O. T. Wood ; Hon. Secretary and Treasurer : Mr. F. E. Goss ; members : Messrs. J. Runnett, J. H. Graham and C. T. Comber. Mr. W. E. Tremain was nominated representative to the Argentine Institute for the Standardisation of Materials, with Mr. H. J. McPhail as substitute.

The meeting was followed by the Annual Dinner.

### Railway Statistics, 1928-1937

The *Instituto de Estudios Economicos del Transporte* has published in Buenos Aires its annual summary of the statistics relating to the working of the Argentine railways during the year 1937, as compared with previous years. The principal figures, relating to the whole of the Argentine railway system, and showing the results of working during the ten years, are given below :—

| Year | Gross earnings | Working expenses | Net earnings | Working ratio |
|---|---|---|---|---|
| | pesos | pesos | pesos | per cent. |
| | (thousands omitted) | | | |
| 1928 ... | 655,668 | 472,068 | 183,600 | 71·7 |
| 1929 ... | 650,585 | 484,405 | 166,180 | 74·1 |
| 1930 ... | 546,516 | 434,455 | 112,061 | 79·1 |
| 1931 ... | 539,203 | 423,364 | 115,839 | 78·2 |
| 1932 ... | 479,112 | 387,323 | 91,789 | 80·5 |
| 1933 ... | 452,519 | 377,206 | 75,314 | 82·6 |
| 1934 ... | 489,031 | 370,839 | 118,192 | 74·9 |
| 1935 ... | 494,576 | 380,748 | 113,829 | 76·2 |
| 1936 ... | 501,240 | 385,150 | 116,090 | 76·0 |
| 1937 ... | 536,783 | 419,054 | 117,729 | 76·8 |

The capital of all the railways is shown to have increased gradually from 3,957 millions of pesos in 1928 to 4,577 millions in 1937, and the net receipts have represented on this capital a return which diminished progressively from 4·64 per cent. in 1928 to 1·67 per cent. in 1933, but increased again since to 2·57 per cent. in 1937. The figures of working expenditure as shown do not include losses on exchange in the case of privately-owned railways, but another table is given showing that the inclusion of those losses brings the calculated rate of interest on capital in 1937 down to 1·94 per cent. Salaries and wages amounted to 292 millions in 1928, or 62 per cent. of working expenses, while in 1937 the total was 276 millions under this head, or 65·8 per cent. of the expenditure. Passengers have decreased in number from 159 millions in 1928 (rising in 1930 to the record figure of 170 millions) to 153 millions in 1937, receipts having fallen from 129 millions to 99·7 millions in the same period. Similarly goods traffic fell from 52½ million tons and 461 million pesos in 1928, to 49 million tons and 381 million pesos in 1937. All these statistical results are shown very clearly in graphic form in the summary, the second part of which also contains detailed figures for the individual companies, with separate totals in which the results of working of the British-owned, the other privately-owned, and the State-owned railways are shown separately. The length of the whole system is summarised as follows :—

| | 5 ft. 6 in. | 4 ft. 8½ in. | Metre | 2 ft. 6 in. | Totals |
|---|---|---|---|---|---|
| British-owned ... ... km. | 21,757 | 2,515 | 2,229 | — | 26,501 |
| Other privately-owned ... km. | 826 | 479 | 3,322 | — | 4,627 |
| State-owned ... ... km. | 1,330 | 704 | 7,749 | 483 | 10,266 |
| Provincial ... ... km. | — | — | 1,367 | — | 1,367 |
| Totals ... ... km. | 23,913 | 3,698 | 14,667 | 483 | 42,761 |

### Collision on B.A.P.R.

The splendid record which the Argentine railways have for safe running and their immunity for many years past from serious accidents was, unfortunately, broken on the night of December 31, when a passenger train leaving the B.A.P. Buenos Aires terminus at 10 p.m. for José C. Paz, collided with an incoming train from Hurlingham, which was crossing its track. The locomotive of the outward bound train crashed into the last second class coach of the incoming train, which was totally destroyed, while the one next to it was overturned and dragged for a considerable distance. One man was killed outright, and about a dozen passengers were injured. The cause of the accident is believed to have been the failure of the driver of the outgoing train to observe that the signals were against him.

### Inauguration of New Section of C.H.A.D.O.P.Y.F., Buenos Aires Subway

A further stage in the construction of the above underground line was reached on December 29, when the section from Calle Aguero to Plaza Italia, a distance of 6 km., was officially opened to service. The ceremony was attended by the President of the Buenos Aires Transport Corporation, Dr. Carlos Acevedo ; the Lord Mayor of the City, Dr. Arturo Goyeneche ; the Chairman of the company, Count Guadalhorce ; and a number of municipal officials who travelled over the new section in a special train. The extension includes two stations, at Calles Bulnes and Canning. The Plaza Italia station is similar in design to the others already open, and is equipped with four escalators. The central platform is 106 m. long and 6 m. wide.

## UNITED STATES

### New Pennsylvania Passenger Stock

The Pennsylvania Railroad has placed orders for 15 new dining cars and 12 advance type coaches, all to be streamlined. The new cars will have modern four-wheel roller-bearing bogies equipped with shock absorbing devices, and the braking system and tight-lock couplers with rubber draft gears will provide quiet, smooth starting and stopping. The cars will be completely air-conditioned by the electro-mechanical system, and laminated safety glass will be used in the double windows. Walls, roofs, and floors will be fully insulated, with non-combustible material, and lighting will be of the diffused type. The new dining cars will bring the Pennsylvania's fleet to a total of 205 units. Each of them will have a maximum seating capacity of 48 passengers, or 12 more than the type of car heretofore in general use. The added capacity will be obtained partly by improved interior arrangements and partly by building the new cars 84 ft. 6 in. in length, or 4 ft. longer than the present usual standard. Drop leaves at the ends of the tables on one side will provide a seating capacity of 36 when the maximum is not required. The kitchens of the new cars will have electric dish-washing machines, and other labour saving devices. The new coaches will be provided with divided, rotating, and reclining seats. The seating capacity will be 66, while the unusual length of the car—approximately 85 ft., or 5 ft. more than the present standard—will allow of roominess throughout. In the external decorative schemes, flowing gold lettering and striping, on a background of rich Tuscan red, will emphasise the graceful symmetry of the streamlined contours, and the new cars will resemble generally those of the new fleet of modern trains which were placed in service at the beginning of last summer, by the Pennsylvania, between its seaboard and

western terminals [described and illustrated in our issue of September 9, 1938—ED. *R.G.*].

# FINLAND

## New Lines Under Construction or Proposed

At the end of 1937 the route-mileage of the Finnish State Railways was approximately 3,350 miles, including the 63-mile line from Lappeenranta to Elisenvaara, opened in the course of that year. There were, however, about 290 miles of line still under construction at the end of the year to complete the 1934-38 construction programme. These were :—

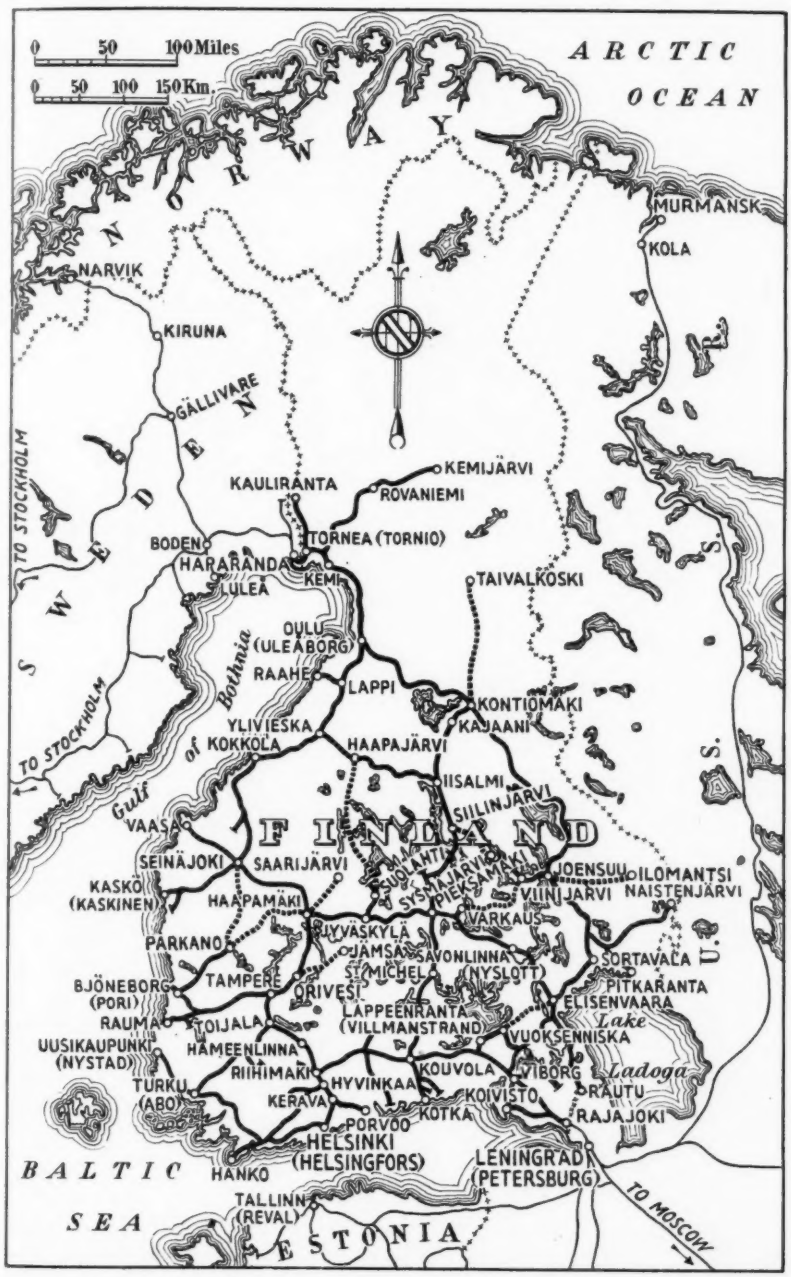
| | Length in miles |
|---|---|
| *Western Finland* | |
| Pori-Haapamäki .. .. | 120 |
| *Eastern Finland* | |
| Varkaus-Viinijärvi .. .. | 63 |
| *Northern Finland* | |
| Kontiomäki-Taivalkoski .. | 107 |

In addition, the Suolahti-Haapajärvi 100-mile connection in Central Finland was being surveyed. Of the three lines under construction, permanent way had been laid throughout the first, which was expected to be opened recently, and the second is also nearing completion.

The construction programme for 1939-40 approved by the Diet in April last includes the following projects :—

| | Length in miles |
|---|---|
| Joensuu-Ilomantsi .. .. | 44 |
| Orivesi-Jämsä .. .. .. | 38 |
| Haapamäki-Saarijärvi .. .. | 47 |
| Seinäjoki-Parkano .. .. | 55 |
| Siilinjärvi-Sysmäjärvi .. .. | 62 |
| Total .. .. .. | 246 |

The latter will be of importance in that it will connect the Eastern line with the Central Railway.




*Sketch map showing lines under construction and proposed in Finland*

## Additions to Rolling Stock

Orders have recently been placed for the following new rolling stock : 400 covered and 300 open wagons, 50 sand wagons, and 14 goods locomotives, the latter from local firms, and the goods stock from the railway workshops at Pasila. Two diesel locomotives were also purchased from Germany.

At the end of 1937, the State Railways owned 624 steam and 2 diesel locomotives, 19 railcars, 1,525 coaching units, and 24,128 goods vehicles, according to the Department of Overseas Trade Report on Economic and Commercial Conditions in Finland, August, 1938 (published January, 1939).

# SWITZERLAND

## New Grisons Communications

The isolated situation of the Canton of Graubünden (Grisons), in Eastern Switzerland, chiefly from the strategic point of view, has been a matter of public interest for some months past and is receiving the attention of the Federal authorities. Various projects have been put forward for new means of communication with the rest of the country. At present the only routes of access are (*a*) the standard gauge Federal line from Sargans and beyond to Chur, with a parallel road; (*b*) the Furka—Oberalp Railway and Oberalp road from Andermatt, connecting with the Gotthard route *via* Göschenen and the Simplon route *via* Brigue; and (*c*) the Splügen and Lukmanier roads from Canton Tessin. A new road is proposed, to connect Glarus with the Rhine valley over the Panix, Segnes, or Kisten passes.

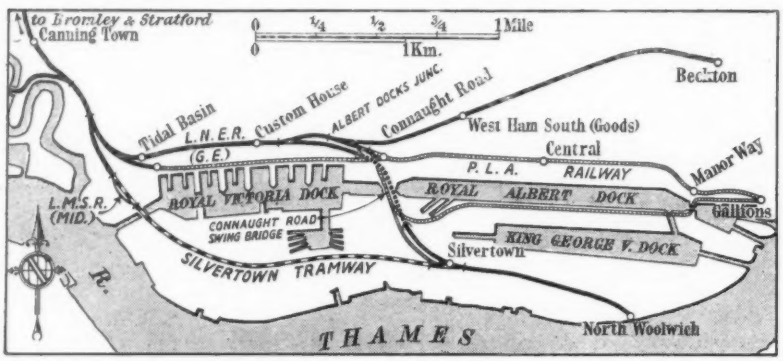
## Furka—Oberalp Developments

As regards rail communication, a project was mooted for a metre gauge line from the Furka—Oberalp route through a long tunnel to join the Gotthard line at Gurtnellen, but the scheme has now been dropped. As a consequence, consideration is being given to equipping the Andermatt—Disentis section of the Furka—Oberalp Railway for all-year working; this would involve track strengthening, electrification on the 11,000-volt single-phase system in use on the Rhaetian Railway (which is joined at Disentis), and also conversion of the Schöllenen Railway (Göschenen—Andermatt) from 1,200 volts d.c. to the same system.

# THE NORTH WOOLWICH LINE

## *Some notes on the origin of interesting running powers possessed by the L.N.E.R. over a P.L.A. docks railway*

BETWEEN Tidal Basin and Silvertown, the North Woolwich line of the L.N.E.R. passes in tunnel underneath the cut connecting the Royal Victoria and the Royal Albert docks. This section of line comprises two lengths of cutting with retaining walls, the north approach 1,000 ft. and the south approach 900 ft. long, while the actual covered way is 1,800 ft., part in twin single-track brick arch tunnel, and part in a double-track single brick arch. The subway was built as cut-and-cover work prior to the construction of the water channel. The line descends to the tunnel at gradients of 1 in 50.




*Sketch map showing the main L.N.E.R. and P.L.A. lines in the neighbourhood of North Woolwich*

In September, 1935, deepening work was undertaken, and this was completed in March, 1936. To facilitate this, certain North Woolwich branch passenger trains were diverted, in the rush hours, over the adjacent Port of London Authority dock railways during the period from September 30, 1935, to March 28, 1936. The origin of the long-standing powers enabling the L.N.E.R. to exercise these running rights is an interesting story, and this was outlined in a recent issue of the *Tramway Society Bulletin*, to which we are indebted for certain of the following notes.

The original route of the Eastern Counties Railway to North Woolwich was along the riverside; it was authorised by the North Woolwich Railway Act, 1845, and opened on June 14, 1847. About the time that the Victoria (London) Dock Acts of 1850 and 1853, authorising construction of the two docks, were passed, the Eastern Counties Railway was seeking powers to construct a loop line from a junction with its existing North Woolwich line near Bow Creek, to one with the same line in the vicinity of Ham Creek. As the loop line, when constructed, would have passed over the site of the cut between the proposed two docks, a provision was inserted in the Eastern Counties Railway (North Woolwich Railway Branches) Act of 1853, Sec. 13, safeguarding the powers conferred on the Victoria Dock Company by its Act of 1850 to build a bridge to carry the railway across the cut.

The Royal Victoria Dock and the loop line were both constructed, but the other dock was not. Consequently, there was no need to build the bridge. When eventually the Royal Albert Dock was constructed, under the London & St. Katherine Docks Act, 1875, the powers were granted to the London & St. Katherine Dock Company (which had taken over the Victoria Dock Company) to divert the loop line through a tunnel under the cut. The "substituted line," as it is legally called, was vested in the Great Eastern Railway. The original line, which was not taken up and is now known as the high level route, became the property of the dock company, which subsequently built the Connaught Road swing bridge to carry a road, as well as the railway, across the cut. This "transferred portion" has to be maintained by the Port of London Authority (which absorbed all the London dock companies in 1909) to the satisfaction of the L.N.E.R. (as successor to the G.E.R.). In the event of the tunnel becoming impassable through any cause, the latter has powers to use the "transferred portion" free of charge, for all traffic, until the tunnel is again fit for operating purposes.

It is interesting to note that, on the recent occasion when L.N.E.R. trains used the high level route, the Connaught Road swing bridge had to be strengthened by electric welding before the heavier L.N.E.R. locomotives were allowed to use the high level docks railway of the P.L.A.

### Locomotives on Factory Sidings

The Use of Locomotives Regulations (1906), made under Factory Acts, deal with the use of locomotives and wagons on sidings in or used in connection with premises under the Acts, and are intended to prevent accidents, which are generally of a serious nature and are often fatal. The regulations came into force in 1906 and, according to the Annual Report of the Chief Inspector of Factories and Workshops for the year 1937, experience has shown that they are rather difficult to interpret and do not cover a number of risks. For instance, a fatal accident occurred at a junction, where sight was intercepted, when an engine drawing a train of wagons collided with a locomotive crane. There was a shunter at the junction, and he signalled to the crane driver to stop and to the locomotive driver to come on. The crane did not stop, and when the two drivers saw each other it was too late to avoid a collision. It came out afterwards that the crane driver had not seen the signal, probably because it was snowing heavily at the time. Had it been a requirement of the regulations that a signal must be acknowledged by whistle, the shunter would have realised that his signal had not been seen, and could have taken other steps which would probably have prevented this accident. The report states that revision of the regulations is under consideration. Statistical tables appended to the report analyse the 1,547 non-fatal and 46 fatal accidents caused during 1937 by locomotives and rolling stock at the various establishments covered by factory legislation.

# WEED-KILLING RECORDS

## *An ingenious system of keeping records has been devised for use with the weed-killing train on the Southern Railway*

THE Southern Railway weed-killing train, described in THE RAILWAY GAZETTE of July 23, 1937 (page 152), has since sprayed over 3,000 miles of track at an average of between 70 to 90 miles a day. In the course of its operations one or two modifications have been made, but these have all been with a view to simplification.

It is not always necessary to spray the full width of the track, and in such circumstances great savings can be made by cutting off one or more nozzles; conversely, any odd patches of weeds encountered *en route* and not previously included in the programme can also be treated.

It was impossible for the operator, when the train was running, to keep records of these variations with any degree of accuracy, and it became obvious that the only way to do this was by means of a graphical record. The recorder shown in the accompanying illustrations was built experimentally and worked satisfactorily throughout the season.

The transparent paper chart is supplied in rolls and passes from the lower to the upper rewinding wheel over a toothed roller, which engages with slots on the paper. The toothed roller is driven direct through a speedometer cable drive from the main pumps which are in turn driven by belts off the axle.

The drive is so arranged that approximately one inch on the paper equals one quarter of a mile. The small reverse gear shown to the right of the recorder is necessary to ensure that the chart travels in one direction only, irrespective of whether the train is propelling or pulling.

The main pumps are connected to the train axle through a friction clutch, and as the recorder is driven from the pump shaft it is operated only when the pumps are working.

Nine pens containing purple chart ink are held off the paper through solenoids which are connected to a 6-volt battery, the supply of current from which is controlled by a master switch that cuts out immediately the main clutch to the pump is disengaged.

Mileage is recorded by the centre pen, which is controlled through a small push button switch on each side of the van. This is pressed by an assistant operator (who also works the side arms) once, twice, or thrice, to correspond with respective ¼-mile posts. This makes a series of small nicks across the paper in a similar manner to the Hallade record. The mile post number is called out and stamped on the chart by the chief operator who is at the controls. He also marks any useful notes as to speed, water pressure, weather, &c.

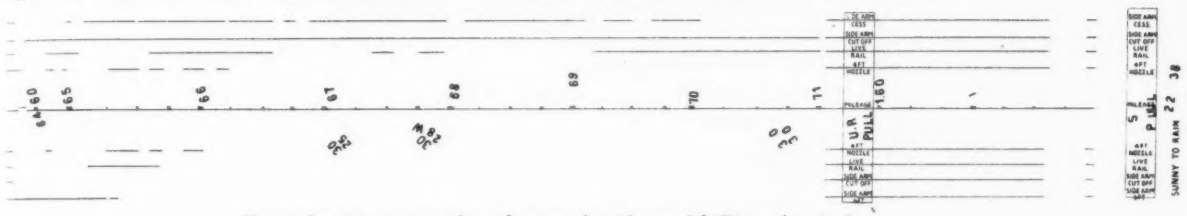
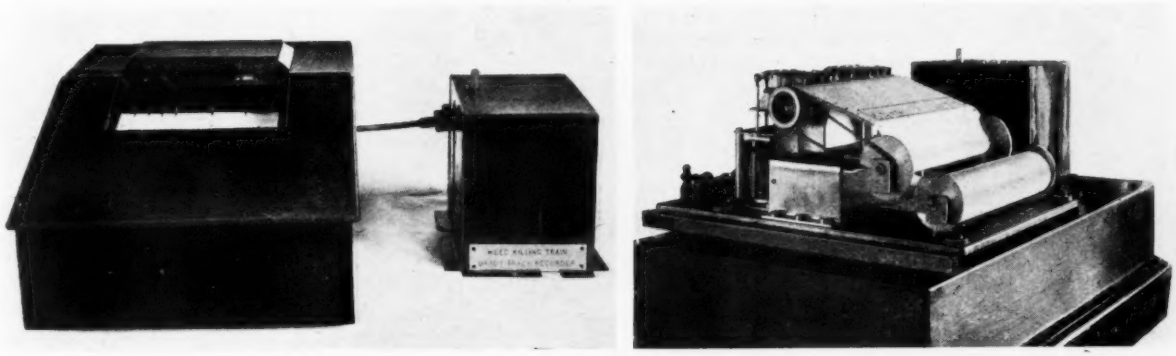



*Chart showing parts of track spread with weed-killing chemical*

Six of the pens are connected to switches which are operated by the levers controlling the various nozzles. When the lever is operated for spraying the switch breaks and allows the pen to fall on the paper. The two remaining pens are connected to rotary switches on the side arms in such a manner that, as the side arm is swung in and the chemical automatically cut off, the switch closes, and the pen is lifted off the paper, and *vice versa*.

The description of each line on the chart is shown by means of a rubber stamp. A complete record of the day's work is thus made, and a permanent record of the season's work built up. Combined with a record of the amount of chemical used it makes accurate costing possible, and if growth or regrowth of weeds occurs it is an easy matter to verify whether or not the track was sprayed.

We are indebted to Mr. G. Ellson, Chief Engineer of the Southern Railway, for the details of the recorder, which was designed by Mr. E. V. Brady, a member of his staff, and built by Evershed and Vignoles Limited.



*Brady track recorder for use with weed-killing train, left, with cover ready for use and, right, with cover removed to show mechanism*

# LOCOMOTIVE BOILER EXPLOSIONS

## *American comment on two explosions against the risk of which repeated warnings had been ignored*

*[The following interesting article dealing with a very important phase of locomotive operation is reproduced from the November issue of our American contemporary, the "Railway Mechanical Engineer." Although primarily dealing with American conditions, it has a general application to locomotive boilers and the circumstances associated with their use on railways in all countries.*—ED. *R.G.]*

TWO locomotive boiler explosions which occurred during the past summer have attracted more than ordinary attention. These were the failure of a boiler of an articulated freight locomotive on the Northern Pacific Railway which completely wrecked the engine and part of the train, and the dropping of the crown plate of the boiler on a Pennsylvania Railroad passenger locomotive without separating the boiler from the frames and, indeed, without derailing or stopping the locomotive and train until they had proceeded for several miles. Both failures were caused by low water, and a contributing cause in each case was the partial ineffectiveness of the boiler feeding apparatus. The firebox of the Northern Pacific locomotive was of unusual size; the crown plate measured 26 ft. 9 in. in length. The evidence indicates that the water level had fallen only about 1 in. below its highest point at the time the crown plate dropped. In the case of the Pennsylvania locomotive the water level apparently had dropped 5½ in. below the highest point on the crown plate.

The number of such accidents and the resulting casualties have shown a gratifying reduction since the boiler inspection law first became effective in 1911. For the fiscal year ended June 30, 1912, there were 856 accidents caused by the failure of some part or appurtenance of the steam locomotive boiler. In these accidents 91 persons were killed and 1,005 injured. During the fiscal year ended June 30, 1937, there were 63 accidents, in which 19 persons were killed and 73 injured. Not all of these are low-water accidents, but most of the casualties, particularly the deaths, are associated with that type of accident.

It is probably too much to expect that the time will ever come when there will be a complete absence of crown-plate failures. Considered in the light of this probability, the significance of these two accidents does not lie in the fact that the plates failed, that the failures resulted from low water, or, indeed, that each was the cause of loss of life. It lies in the fact that in each case during a considerable period immediately preceding the accidents the records show that repeated reports had been turned in by the enginemen on the improper functioning of the feedwater apparatus.

Following the Northern Pacific accident, examination of the feedwater feeding equipment disclosed the fact that the packing ring of the drifting-control-valve piston was missing. The leakage of steam past the piston of this valve, the purpose of which is to cut down the speed of the hot-water pump when the locomotive is standing or drifting and automatically to cause it to operate according to the opening of the pump throttle when the locomotive is working steam, may result in the piston remaining stationary or not moving sufficiently to permit the full steam flow to the pump, thereby decreasing its capacity. During the 17 days prior to the accident eight separate reports, indicating that the water pump was unable to supply the boiler, were made by seven different enginemen. In each case the record indicates that repairs or examinations of the water pump were made. In one case the engineman apparently suspected the nature of the defect and asked for examination of the drifting control valve and the float to the water pump. In his report of the investigation, Chief Inspector Hall of the Bureau of Locomotive Inspection says that "the reduced capacity of the boiler feed pump caused by a defective drifting control valve was a contributing factor."

During a period of approximately one month prior to the failure of the crown plate on the Pennsylvania locomotive, six reports by three enginemen all indicate that one or both of the injectors failed to supply the boiler or fully to take up the water. Examination following the accident showed that the two injectors were so installed that with the steam-valve handles in the full open position the steam valves were actually something less than fully open, thus producing a condition in which the injectors were much more liable to break than would normally be the case. The temperature of the water in the tank indicated that one of the injectors, with the overflow valve closed, had broken and had blown steam back into the tank for some time.

The facts in both cases indicate complete futility on the part of the maintenance staffs in their attempts to locate these repeatedly reported defects which ultimately were the cause of, or at least contributed to, destructive crown-plate failures resulting in the death of seven persons and jeopardising the lives of many others. Can these failures to make effective repairs be attributed to a certain callousness resulting from traditional differences of viewpoint between engine crews and enginehouse staffs? We are reluctant to believe so. And yet it would seem that a repetition of reports in a matter so vitally affecting safety would cause an uneasy foreboding in the enginehouse which would not be relieved until the underlying cause of repeated work reports had been discovered and removed. Are not two widely separated cases of the failure and ineffectiveness of such an attitude a possible warning that budget trimming is beginning to exceed the limits of safety?

---

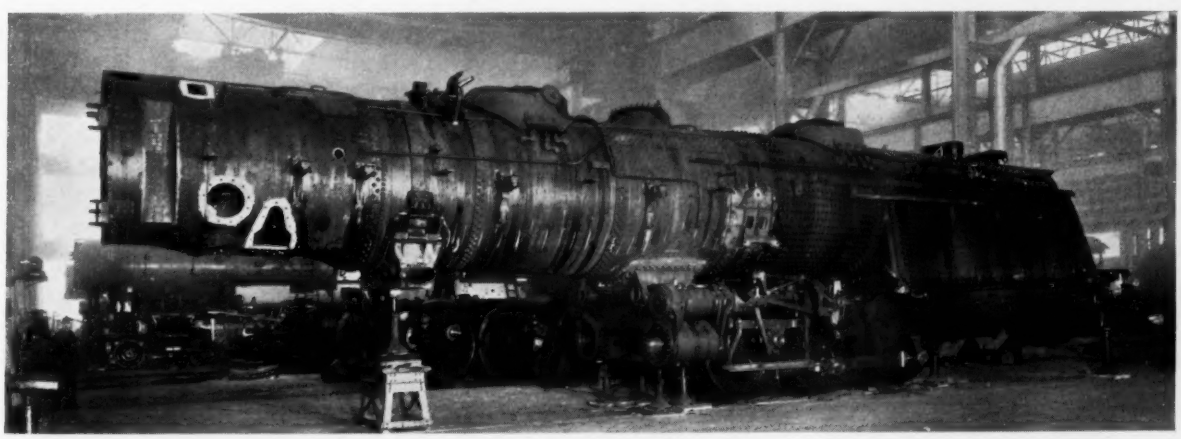
B.S.S. FOR ELECTRIC SIGNAL LAMPS.—A British Standard Specification for electric lamps for railway signalling purposes was first published in 1932, since when the manufacture of suitable lamps in this country has considerably increased. It has now been found possible to omit from the specification several of the lamps which were originally standardised, while on the other hand several comparatively new types of lamps have come into such general use that their standardisation has been considered essential. The latter have therefore been included in the revised edition of the specification which has just been issued as B.S. 469-1939. This revision also includes, in an appendix, the details of those lamps originally included in the 1932 edition but which are now regarded as obsolescent, so that these details can be referred to when such lamps are required for replacement purposes. Copies of this revised British Standard Specification, No. 469-1939, may be obtained from the British Standards Institution, 28, Victoria Street, S.W.1, price 2s. 2d. post free.

# NEW AMERICAN 4-6 + 6-4 ARTICULATED LOCOMOTIVES

*These engines, built by the Baldwin Locomotive Works for the Denver & Rio Grande Western Railroad, have four single-expansion cylinders and develop a tractive force of* 105,000 *lb.*

TEN articulated locomotives of the 4-6+6-4 type built by the Baldwin Locomotive Works have recently been placed in service on the Denver & Rio Grande Western Railroad. These engines have four single-expansion cylinders, and are intended for service on grades up to 3 per cent.; the sharpest curvature negotiated is 16 degrees, although the design is planned for a 22-degree curve. The engines are classified L-105, the numerals representing the maximum tractive force in thousands of pounds. With coupled wheels 5 ft. 10 in. dia., they are suitable for fast freight service.

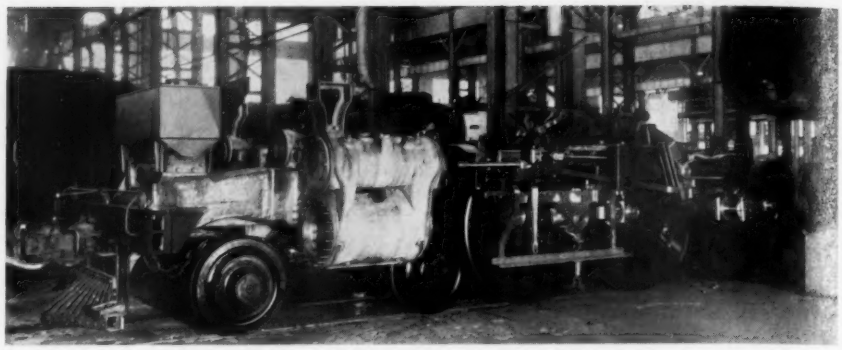
The boiler is of very large proportions, and equipped for burning coal. The inner firebox, provided with combustion chamber, is electrically-welded to the crown and inside throat plates; and the seams on the bottom of the combustion chamber and round the fire-door opening are also welded. A working pressure of 255 lb. per sq. in. is adopted, but the boiler was tested with steam at 275 lb., and with water at 319 lb. The cylinders in each group drive the trailing pair of coupled wheels; steam distribution is by 14-in. dia. piston valves actuated by Walschaerts gear. An arrangement for providing variable lead is used on these engines. The front end of the radius rod is pinned to a block which can move vertically in a slot placed in the upper end of the combining lever. The block is suspended from a bell-crank connected to the reversing shaft by a reach rod. Moving the block is equivalent to changing the length of the combining lever, the result being that the lead is increased from zero in full gear to $\frac{3}{8}$ in. at 25 per cent. cut-off. The maximum valve travel is $7\frac{1}{4}$ in., steam lap $1\frac{3}{4}$ in., and exhaust clearance $\frac{1}{16}$ in. The following are the



*View in the erecting shop of the Baldwin Locomotive Works showing boiler mounted and rear cylinders and wheels in place*

principal particulars of the locomotives :—

| | |
|---|---|
| Cylinders (4), dia. | 23 in. |
| Piston stroke, dia. | 32 in. |
| Wheels, coupled, dia. | 5 ft. 10 in. |
| Wheelbase, coupled | 35 ft. 6 in. |
| ,, rigid | 12 ft. 2 in. |
| ,, engine | 61 ft. 6 in. |
| ,, engine and tender | 108 ft. 0 in. |
| Boiler, dia. | 7 ft. 10½ in. |
| Steam pressure | 255 lb. per sq. in. |
| Firebox length | 18 ft. 0¼ in. |
| ,, width | 9 ft. 0¼ in. |
| Heating surface (evaporative) | 6,341 sq. ft. |
| Superheating surface | 2,628 sq. ft. |
| Combined total heating surface | 8,969 sq. ft. |
| Grate area | 136·5 sq. ft. |



*Front unit ready for placing under locomotive*

The piston heads are of nickel cast steel, and the coupled wheel centres, 5 ft. 3 in. dia. are of the Baldwin disc type, using special high-tensile steel. Forty per cent. of the reciprocating weight is balanced, and the main wheels are cross-balanced. All the driving tyres are flanged, and the driving axles, fitted with SKF roller bearings, are of hammered carbon steel forgings. The front engine truck is designed for a swing of 6 in. on each side of the centre line. It is fitted with roller bearings, as is also the rear bogie truck, designed to swing 8½ in. on each side of the centre line at the rear wheel.

In working order the engine weighs 286 tons 12 cwt., of which 195·5 tons are available for adhesion. The total weight of engine and tender in working order is 462 tons 2 cwt. A tractive force of 105,000 lb. is developed. The tender has a water capacity of 20,000 U.S. gals. and a fuel capacity of 26 tons (the foregoing weights are expressed in British tons).

## THE LONDON & BIRMINGHAM CENTENARY MEDAL

***A handsome commemorative token struck by the L.M.S.R. last year. The first specimen was presented by Lord Stamp to H.R.H. the Duke of Gloucester at the centenary banquet***

WHEN the London & Birmingham Railway was opened throughout, on September 17, 1838, Philip Hardwick, the Architect, presented to the directors and officers of the company a medal depicting on the obverse the famous Doric arch at Euston, and on the reverse the names of those composing the board of directors. Lord Stamp, Chairman and President of the Executive of the L.M.S.R., referred to this at the centenary banquet held at Grosvenor House, Park Lane, London, on November 14 of last year (see THE RAILWAY GAZETTE of November 18, 1938, page 879-882). He said: "The makers of Old Euston one hundred years ago struck a commemorative medal, and today, keeping its *motif*, the L.M.S.R. is following the example, and will thus be enabled to reply in kind to the various complimentary tokens of the sort received from abroad of late years." Lord Stamp then asked His Royal Highness the Duke of Gloucester, the principal guest at the banquet, to accept the first specimen struck.

As will be seen from the reproductions below, the obverse of this centenary medal shows the Euston arch, which was erected from Bramley granite as an embellishment to the station and completed in May, 1838, at a cost that the L.M.S.R. records show to have been approximately £35,000. Beneath are the names of the 1838 Chairman (George Carr Glyn), the Engineer (Robert Stephenson), and the Architect (Philip Hardwick), of the London & Birmingham Railway. The reverse bears the names of those composing the 1938 L.M.S.R. board of directors, and of the Secretary, Mr. Owen Glynne Roberts. To the last-named we are indebted for facilities in reproducing this historic and handsome medal.

*Full-size reproduction of the commemorative medal struck by the L.M.S.R. to mark the Centenary of the London & Birmingham Railway. The obverse (left) shows the Euston arch in 1838, and the reverse (right) the composition of the 1938 board of directors of the London Midland & Scottish Railway*

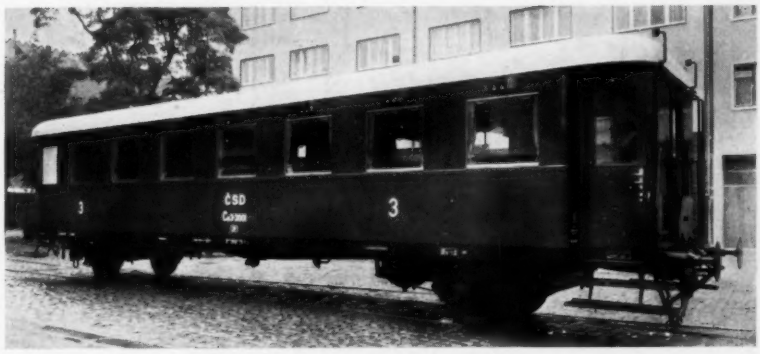
# NEW PASSENGER ROLLING STOCK, CZECHO-SLOVAK STATE RAILWAYS

*New main-line second and third class composite corridor coach*

INCLUDED in recent orders for new rolling stock by the Czecho-Slovak State Railways are some main-line bogie stock and some four-wheel passenger vehicles for local services. The former are 74 ft. 10 in. long and 9 ft. 2 in. wide overall, and contain four second and five third class compartments, seating respectively 24 and 40 passengers within a tare weight of 46 tons. They are of all-steel welded construction with reinforced anti-telescoping ends. The bogies also are of welded construction, with Isothermos axleboxes. The four-wheelers have a length over buffers of 51 ft. 3 in. and a wheelbase of 30 ft. 7 in. Seats for 61 passengers are provided within a total tare of 20 tons. They are also of all-metal welded construction.

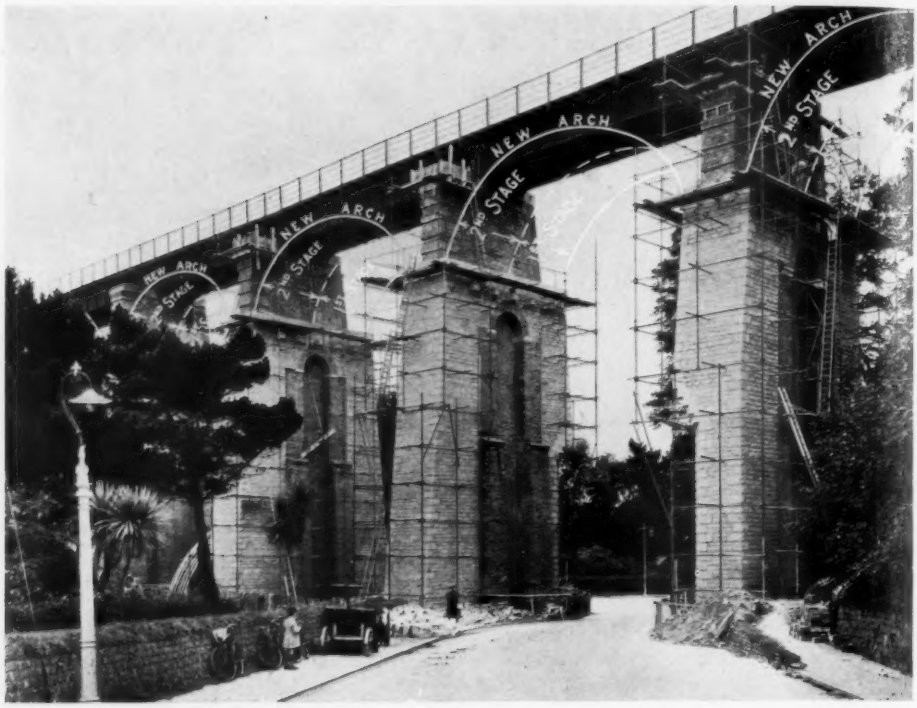
A feature of the vehicles is the ventilation, which is provided in each compartment by a special opening from a duct in the side above the windows. The opening is controlled by a handle so that the air in each compartment can be easily regulated by the occupants. All vehicles include lavatories and steam heating.

*Interior of main-line third class corridor compartment*

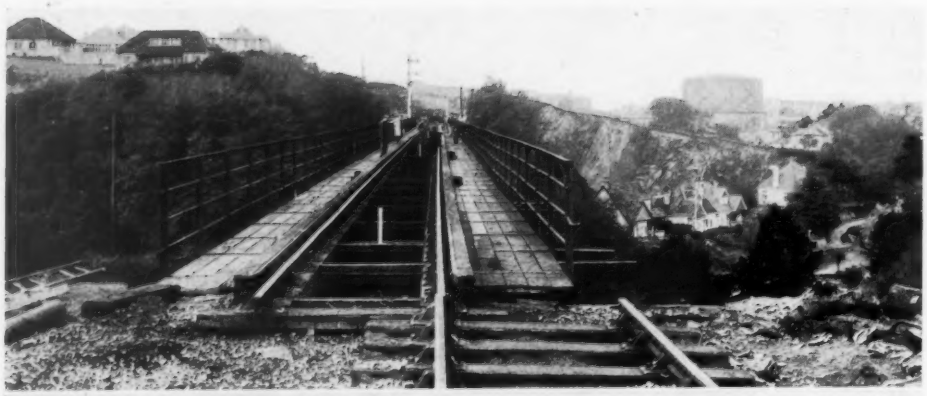



*New third class corridor four-wheel coach for local services*

FOREIGNER'S IDENTITY CARD IN FRANCE.—The French Government recently announced that the price of the *Carte d'Identité d'Étranger* (Foreigner's identity card), which must be obtained by those making a continuous stay of more than 6 months in France, has now been increased from fr. 260 to fr. 400 for ordinary visitors, and from fr. 65 to fr. 100 for students and employees.




*Right : General view of the Trenance viaduct showing the stages of the reconstruction scheme, and the positions of the new arches ; note also the chamfered and corbelled piers*



*Left : The viaduct from above, viewed before the slewing*

*Left : View from the same point after the slewing*

(*See article opposite*)

*THE RECONSTRUCTION OF TRENANCE VIADUCT, GREAT WESTERN RAILWAY*

# THE RECONSTRUCTION OF TRENANCE VIADUCT, G.W.R.

***The viaduct is being rebuilt for a double line, and as an arched instead of steel girder structure. This involved the slewing through a transverse distance of 6 ft. of the entire 450-ft. steel superstructure***

SITUATED at Newquay in Cornwall, this viaduct at present carries only a single line on its nine 45-ft. plate girder spans. The overall length is 450 ft. and maximum height 75 ft.; the piers are constructed of local stone. The viaduct is not only being reconstructed to carry a double line, but is being converted from a girder to an arch span structure, work which has to be carried out under traffic.

The first stage was to encase and extend the ends of each pier in granite masonry to provide the necessary extra width, and, incidentally, two piers adjacent to a road were chamfered off on the skew and corbelled out to full section at a level clear of road traffic. The arches are to be built in two stages, the southern halves being completed first, the girder spans meanwhile being slewed over on to the northern halves of the piers, a delicate work successfully accomplished on Sunday, October 9. When the southern halves of the arches are complete, the track will be diverted from the girder spans to them, and the steelwork can then be removed, and the northern halves of the arches built in its place.

*Right : Views showing the steel super-structure of the Trenance viaduct before and after the slewing operation*

*Below : A close-up view of the plate and roller method used in moving the steelwork*

### Slewing 450-ft. Superstructure

The work on October 9 consisted mainly of slewing the whole of the steel girder work from the centres of the piers 6 ft. northwards, there to be supported on brick piers previously built up from the new skewback level. At 6.30 a.m. the road was broken at each end of the viaduct, and at 7 a.m. the contractors began jacking up all the spans simultaneously with 35- to 50-ton jacks. By 9 a.m. the whole of the steelwork complete with track had been lifted 3 in., enabling the ends of ½-in. plates, 8 ft. long and 6 in. wide, to be slipped under the bearings of each span, these plates extending in the direction of the slew. On the plates groups of three 1½-in. dia. steel rollers were placed under each bearing plate, and a ½-in. cover plate, 1 ft. 9 in. square, and having an upwards chamfered leading edge, was inserted on the rollers; the girders were then lowered on to these plates and rollers.

At 10.7 a.m. slewing with horizontally-placed jacks began, each jack resting against a short length of vertical rail embedded in the top of pier with concrete. As the rollers cleared themselves from the back of each cover plate they were replaced under its leading edge, spare rollers being available so that each girder bearing always rested on at least three rollers.

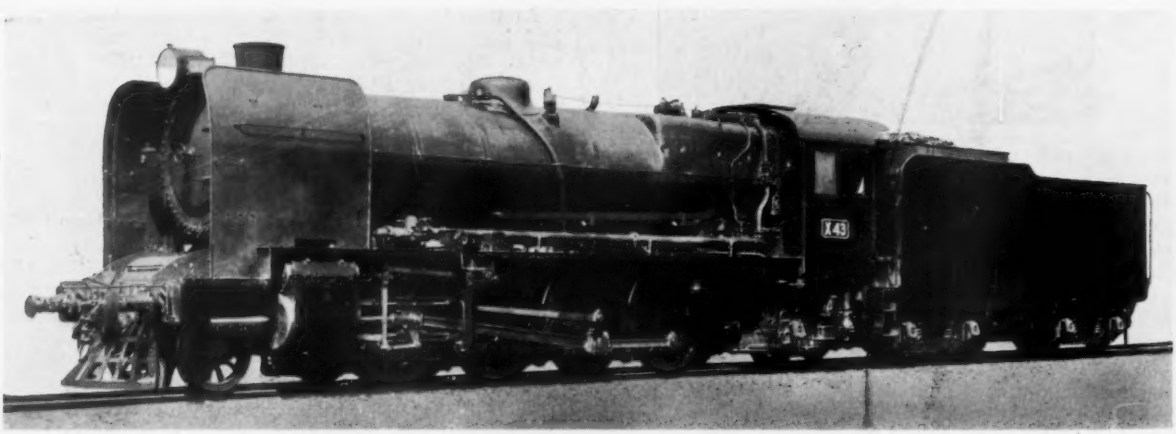
In under 2 hr. the whole 450-ft. length of steelwork had been traversed 6 ft. sideways, care being taken to ensure that the whole superstructure moved at a uniform rate throughout its entire length. The girders were then again jacked up, the rollers and plates removed, and the girders lowered on to their new bearings by 3 p.m. Meanwhile the track on each viaduct approach had been slewed to conform to this new alignment, and was now linked up with that over the structure, the track circuiting made good, and by 4 p.m., the road in its new northern position was ready for traffic; the first train crossed the viaduct at 4.25 p.m. The work is under the supervision of the Resident Engineer, Mr. J. V. Franklin.

It is of incidental interest to note that this viaduct occupies a historic site, for the Trenance valley was originally crossed at this point by a timber viaduct built by J. T. Treffry to carry his tramroad from East Wheal Rose Mine to Newquay harbour; this was opened in January, 1849. The tramroad was absorbed in 1873 by the Cornwall Mineral Railways Company which reconstructed the whole line, partly rebuilt the Trenance (or Tolcarne) Viaduct, and opened it for public traffic on June 1, 1874.

## Rail Laying on Finchley Tube Extension, London Transport

*Right: Producing 300-ft. rails by welding five 60-ft. lengths in a flash-butt welding machine, seen in the background, at Wellington sidings, near East Finchley. The rails, as they are welded, are pushed out on to flat trucks ready for conveyance to the tunnels*

*Left: A 300-ft. rail after having been lifted off the flat trucks in the tunnel and towed forward on roller bearings attached to the tunnel roof. It is about to be lowered and placed in the chairs by means of the skids shown. The Brogden half-lapped rail joints will be noticed in these pictures*




*The first of four re-designed "X" class freight locomotives recently built at the Newport shops of the Victorian Government Railways. These engines were briefly described in "The Railway Gazette" of December 23 (page 1084). They have welded mild steel trailing trucks, believed to be the first of their kind in the world. The tender tank and underframe of this engine are all-welded; in the other three engines the tanks are riveted*

# RAILWAY NEWS SECTION

## PERSONAL

Mr. Ashton Davies, we are pleased to learn, has now practically recovered from his long illness, and is going on a cruise to the West Indies to-morrow (Saturday), prior to resuming his duties as Acting Vice-President of the London Midland & Scottish Railway, on or about March 27.

---

Mr. A. A. Davis, M.Inst.C.E., who, as announced in our issue of February 3, will retire tomorrow from the post of Divisional Engineer, Shrewsbury, G.W.R., has been in the service of the L.N.W.R. and G.W.R. Joint Committee and of the Great Western Railway for a period of 36 years. His appointment as Divisional Engineer took place in July, 1926. Mr. Davis served his pupilage with Mr. H. V. McKie, Civil Engineer, Westminster, and was subsequently engaged as resident engineer on water works in Surrey; as an Assistant Engineer on the Metropolitan, and the Midland & South Western Junction Railways; and under the Essex County Council, before becoming Chief Assistant to the Engineer of the L.N.W.R. and G.W.R. Joint Committee at Birkenhead. In January, 1909, Mr. Davis was transferred to the new Divisional Engineer's office at Shrewsbury, on the abolition of the Joint Engineer's Office, and was appointed Chief Assistant at Shrewsbury in July, 1916. During Mr. Davis's term as Divisional Engineer at Shrewsbury the following works have been carried out under his supervision: remodelling of the Birkenhead (Morpeth Dock) goods yard, including the erection of new warehouses; extensive siding accommodation to serve the power stations at Buildwas and Stourport-on-Severn, involving heavy earthworks; complete siding accommodation, including extensive earthwork and drainage system, to serve the Highley Mining Company's new shaft at Alveley, near Highley. Since 1926 over 70 bridges on the Shrewsbury Division have been reconstructed and numerous slips in cuttings, embankments, and so on, have been successfully dealt with. During the same period, works necessitated by heavy floods and washaways in the North Wales district and the clearing of branch lines in the same district blocked by snow, in places to a depth of 20 ft., have been effected under the direction of Mr. Davis.

***Mr. A. A. Davis***

Divisional Engineer, Shrewsbury, G.W.R., 1926–39

***Mr. J. A. Denney***

Appointed Divisional Engineer, Shrewsbury, Great Western Railway

*Elliott]* *[& Fry*

***Mr. C. A. Neale***

Appointed Divisional Engineer, Oswestry, Great Western Railway

---

Mr. J. A. Denney, A.C.G.I., Divisional Engineer, Oswestry, G.W.R., who, as recorded in our issue of February 3, has been appointed to succeed Mr. A. A. Davis as Divisional Engineer at Shrewsbury, was a pupil under the late Mr. G. J. Churchward, C.B.E., between 1905 and 1907, and subsequently under the late Mr. W. W. Grierson, C.B.E., Chief Engineer from 1907 to 1909. During the latter period he was engaged on the construction of the Swansea District lines under the resident engineers. Mr. Denney was appointed Assistant at Plymouth in June, 1910; Assistant Divisional Engineer at Bristol in November, 1924; and Divisional Engineer, Oswestry, in January, 1936.

Mr. C. A. Neale, B.A.I., B.A. (Dublin), A.M.Inst.C.E., Assistant Divisional Engineer, Bristol, Great Western Railway, whose appointment to succeed Mr. J. A. Denney as Divisional Engineer, Oswestry, was recorded in our issue of February 3, was educated at Dublin University, and served with the Royal Engineers in Mesopotamia from 1916 to 1920. He then joined the service of the Burma Railways, with which he was engaged for three years on the construction of new lines. In December, 1924, a year after his return to England to join the Great Western Railway service, Mr. Neale was appointed Assistant in the Plymouth Divisional Engineer's office. He became Assistant Divisional Engineer, Gloucester, in September, 1932. Mr. Neale was appointed in January, 1936, to the position of Assistant Divisional Engineer at Bristol he now vacates.

---

L.M.S.R. Appointments

The directors have approved the following appointments:—

Mr. J. J. Jefferson, Chief Permanent Way Inspector, Abergavenny, to be Chief Permanent Way Inspector, Lancaster.

Mr. G. H. Hines, Permanent Way Inspector, Cudworth, to be Chief Permanent Way Inspector, Abergavenny.

---

Mr. F. J. Bettley retired on January 31 from the position of Transport Manager and Registrar of W. T. Henley's Telegraph Works Co. Ltd. He is succeeded by Mr. H. Murfin as Transport Manager and Mr. A. E. Allen as Registrar. Mr. Bettley's period of nearly 42 years' service with the company began

in 1897, when he entered the firm as a junior in the head office staff. Later he took over duties in connection with shipping—a branch which developed into the Transport Department. On his retirement Mr. Bettley was the recipient of tokens of appreciation from office friends and was also the guest of honour at a supper arranged by them on February 2.

---

We regret to record the death on February 9 (briefly announced last week) of Mr. Charles Sydney Page, who retired in 1935 from the position of Chief Docks Manager, Great Western Railway. Mr. Page began his 49 years' railway service in 1886 when he joined the North Eastern Railway as a clerk in the General Goods Manager's office. Four years later he was promoted to the General Manager's office. While still in his teens Mr. Page became Personal Clerk to the General Manager, Sir George Gibb, a position he held for nine years. His next appointment was Chief Clerk to the District Goods and Docks Manager, Hull, followed, successively, by appointments as Assistant Yardmaster, Yardmaster, and—in 1907—Assistant Divisional Goods Manager. In 1910 he became Goods and Mineral Manager for the York and Leeds District, and in 1913 District Superintendent at Hull. He left the North Eastern in 1920 to take up the position of Assistant General Manager of the Cardiff Railway. On the amalgamation with the G.W.R. in 1922, Mr. Page became Assistant Chief Docks Manager, G.W.R., and four years later Chief Docks Manager, the position he held up to his retirement. Mr. Page was a member of the Government's Standard Advisory Committee in connection with the Port Transport Industry, and of the board of management of the Railway Benevolent Institution. He was also a gold-medallist of the Institute of Transport.

*The late Mr. Charles S. Page*

Chief Docks Manager, Great Western Railway, 1926–35

---

Mr. James T. Hodgson, M.I.Mech.E., whose recent death was recorded in our issue of January 27, was born in 1867, and educated at Greenacres and at Oldham Technical School. He was apprenticed to Buckley & Taylor, engineers, of Oldham, with whom he worked from 1881 to 1890. Next he joined the Oldham Engineering Co. Ltd., but in 1893 he left to go to Hetherington's Limited, of Manchester. In 1900 Mr. Hodgson began his long connection—32 years—with the Manchester College of Technology, where he gained the post of Chief Engineer and Superintendent of Works. Here also for 21 years he was connected with the Locomotivemen's Craft Guild, of which he was President for a time. After retiring in 1932 Mr. Hodgson went to live near Marple, and at once interested himself in the public life of the district. Two years ago he was elected a member of Marple Urban District Council, which he was able to assist with his wide engineering knowledge. He wrote books and articles on engineering; the best known of his works, perhaps, was "Locomotive Management: Cleaning — Driving — Maintenance," in which he collaborated with the late Mr. John Williams, and of which a seventh edition has just been published.

*The late Mr. James T. Hodgson*

Joint author of "Locomotive Management: Cleaning—Driving—Maintenance"

---

Mr. George Morton, Chief Accountant of the L.M.S.R. Company, has been appointed a Director of the Trent Motor Traction Co. Ltd. in the vacancy caused by the death of the late Lt.-Colonel J. H. Follows. Mr. Morton is also a Director of the Birmingham & Midland Motor Omnibus Co. Ltd.

---

Mr. John G. Barr, Divisional Superintendent of Motive Power, Glasgow, L.M.S.R., retired on January 31. Mr. Barr, a native of Glasgow, was educated at Perth, where his father was Divisional Civil Engineer for the Northern Section of the former Caledonian Railway. After studying engineering at Dundee, and Glasgow, he joined the Caledonian Railway as a pupil in the Civil Engineer's Office at Perth in September, 1891. A month later he transferred to the Mechanical Engineer's Department where he completed a full mechanical engineer's apprenticeship in the workshops in Perth and later St. Rollox, training in the blacksmiths, boiler, machine, fitting, pattern, and engine-building shops, thence to the drawing office. This was followed by two years in the engine shed at Polmadie as a running shed fitter gaining running and breakdown

*Mr. J. G. Barr*

Superintendent of Motive Power (Northern Division), L.M.S.R., 1923-39

experience. In December, 1899, Mr. Barr was appointed Assistant to the District Locomotive Foreman at Hamilton shed, and in the next five years occupied successively the positions of night shift foreman at Dawsholm shed, relief foreman, and Locomotive Running Inspector. From January, 1905, to March, 1908, he filled the positions of Locomotive Foreman in the Dundee and Aberdeen Districts respectively. In the spring of 1908 Mr. Barr became Running Assistant to the Locomotive Superintendent at the headquarters at St. Rollox, and in May, 1914, was appointed Assistant Locomotive Superintendent in running matters for the Caledonian Railway, a position involving responsibility for equipping running sheds to carry out repairs beyond simple running repairs. On January 1, 1923, he became Superintendent of Motive Power (Northern Division) for the combined companies of the London Midland & Scottish group, which position he held until January 31 last.

---

The Rt. Hon. Leslie Burgin, LL.D., M.P., Minister of Transport, has appointed Mr. G. A. W. Smith to be his Assistant Private Secretary.

---

Sir Leonard Browett, K.C.B., C.B.E., Permanent Secretary to the Ministry of Transport, has appointed Mr. H. W. Spiro to be his Private Secretary.

---

At an Investiture held by the King at Buckingham Palace on Tuesday, February 14, Mr. Ashton Davies, Acting Vice-President, L.M.S.R., was invested with the insignia of a Commander of the Royal Victorian Order, and Mr. O. Glynne Roberts, Secretary, L.M.S.R., with the insignia of a Commander of the Order of the British Empire.

---

LONDON TRANSPORT STAFF CHANGES

Owing to the increasing pressure of work on extensions and improvements and to provide for the maintenance and upkeep of an enlarged railway system, certain changes in organisation become necessary. To distinguish between the various chief engineers of the board, it has been decided to add the word "civil" to the title of Mr. V. A. M. Robertson, who will be known in future as the Chief Engineer (Civil) of the board. The following changes have been made in the organisation of his department:—

Mr. H. J. Green, at present Assistant to the Chief Engineer, will become a Principal Officer and his title will be Assistant Chief Engineer (Civil). He will be directly responsible for the oversight of all works concerned with Air Raid Precautions and with the Building Department.

Mr. W. S. Every, the Signal Engineer, and Mr. S. A. Heaps, the Architect will also become principal officers.

Mr. H. Carter, formerly Superintendent (Building Department), will become Assistant New Works Engineer.

Mr. J. F. Woollcombe will become an Officer of the Board as Superintendent (Building Department).

The officers of the department will therefore be:—

CHIEF ENGINEER (CIVIL), Mr. V. A. M. Robertson.
Assistant Chief Engineer (Civil), Mr. H. J. Green.
Air Raid Precautions Officer, Mr. E. H. Beal.
Superintendent Building Department, Mr. J. F. Woollcombe.
Civil Engineer (Maintenance), Mr. J. H. Condy.
Permanent Way Engineer (New Works), Mr. A. S. Young.
New Works Engineer, Mr. J. H. H. Mason.
Assistant New Works Engineer, Mr. H. Carter.
Permanent Way Engineer (Trams), Mr. H. Raine.
Assistant Permanent Way Engineer (Trams) Mr. R. E. S. Macintyre.
Signal Engineer, Mr. W. S. Every.
Assistant Signal Engineers, Mr. R. Dell and Mr. R. F. Morkill.
Architect, Mr. S. A. Heaps.

---

We regret to announce the death, on February 12, at Plymouth, of Mr. William Enoch Butland, divisional bridge inspector, Great Western Railway. Mr. Butland was 64 years of age, and had 50 years of service on the railway. He was a prominent member of the Permanent Way Institution.

---

FUNERAL OF MR. C. S. PAGE

The late Mr. C. S. Page, whose portrait and brief biography appear on the opposite page, was a native of Yorkshire; the funeral service was held in Pannal Church, Leeds, and was followed by cremation at Lawnswood, Leeds. There was a large attendance of retired and serving officers of the Great Western and London & North Eastern Railways, and among those present, in addition to the family mourners, were:—

*Great Western Railway.*—Messrs. F. R. E. Davis, representing the Chairman and Directors; H. Wheeler, representing the General Manager; and L. E. Ford.

*London & North Eastern Railway.*—Messrs. W. E. Blakey, R. A. Daws, J. S. Harper, W. W. Masser (representing the Divisional General Manager, Mr. Jenkin Jones), R. Ritchie, J. Shaw, J. H. Smeddle, J. Steel, J. Williamson.

The service was conducted by the Rev. C. E. Dixon, Vicar of Pannal.

---

Major A. H. Bibby, a Director of the L.N.E.R., has been elected to the board of the Suez Canal Company to fill the vacancy caused by the death of the late Sir Edmund Wyldbore-Smith.

---

The late Lt.-Colonel J. H. Follows, C.V.O., C.B.E., a former Vice-President of the L.M.S.R., whose death on December 13 we recorded in our issue of December 16, left personal estate valued at £29,275 (£26,473 net).

---

Mr. Charles Sheath is one of the directors of the Southern Railway Company who retire by rotation this year, and he has intimated that he will not seek re-election. The report of the Southern Railway Company states in this connection that "Mr. Sheath's colleagues on the board wish to record their very high appreciation of his long, devoted, and unfailing service to the company and the South Eastern Railway Company. Mr. Sheath has offered to give the company the benefit of his advice and great experience whenever it may be required, and the directors will not fail to avail themselves of this offer should occasion arise."

To fill the vacancy on the board caused by Mr. Sheath's retirement, the directors recommend the election of Lord Kennet, who is eligible and offers himself for election. Lord Kennet, as Sir Edward Hilton Young, was formerly a director of the Southern Railway Company and resigned in 1931 on being appointed Minister of Health.

---

Mr. J. D. Ziesecke, the Southern Railway Agent at Cologne, retired on January 1 and has been succeeded by Mr. W. F. Spree, hitherto Assistant Agent.

---

We regret to record the death on February 6 of His Highness Maharaja Sir Sayaji Rao Gaekwar, Bahadur, Maharaja of Baroda, G.C.S.I., G.C.I.E., whose property is the Baroda State Railways system, 648 miles in length and worked by his State.

---

We regret to record the death on February 14, at the Chase, Weeke, Winchester, at the age of 57, of Mr. Geoffrey Harnett Harrisson, C.M.G., Chairman of the Great Western of Brazil and the Central Uruguay Railway Companies, and a Director of the Entre Rios and other Argentine railway companies.

---

The directors of the Midland Bank Limited announce with great regret the retirement of Mr. W. G. Bradshaw, C.B.E., from the office of Deputy Chairman of the board, after 48 years' service in that post. They are pleased to state that he will remain on the board of the bank. They also have the pleasure to announce that Mr. L. H. Walters has been elected a Deputy Chairman of the board, in succession to Mr. Bradshaw.

---

COLONIAL OFFICE APPOINTMENTS

The Secretary of State for the Colonies has recently approved the following appointments:—

Mr. R. C. Gowthorpe, Senior Assistant Engineer, to be District Engineer, Kenya-Uganda Railways.

Mr. J. Norman, Senior Clerk, to be Administrative Assistant, Kenya-Uganda Railways.

Mr. F. G. W. Potter, Outdoor Machinery and Weighbridge Inspector, to be Storekeeper, Nigerian Railway.

---

Dr. H. R. Rishworth has been appointed to officiate as Principal Medical and Health Officer, G.I.P.R., as from December 8 last.

XUM

# Advertising the "Square Deal"

**The methods by which a nation-wide publicity campaign is directed and co-ordinated between the four railway groups**

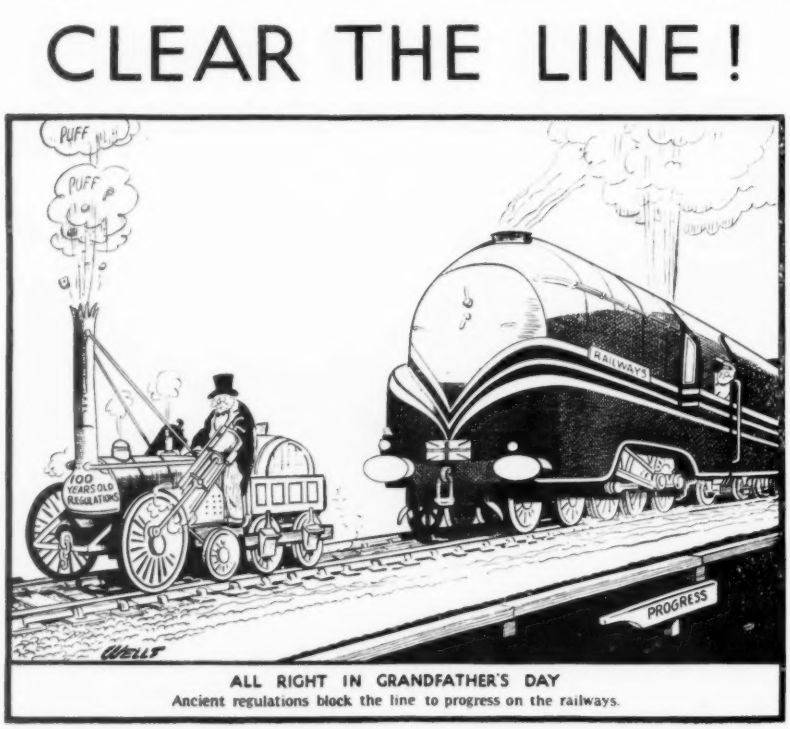
It is a little over two months since the first posters and handbills in the railway "square deal" campaign made their appeal to public notice. Contemporary events have made even the normally tranquil British mind receptive to suggestions of urgency, so on the whole the propaganda of the railways has been assisted rather than obscured by the numerous parallel appeals for support for this, that, or the other cause. In "square deal" the railways have found a slogan that gets home quickly, being terse and colloquial without being hackneyed. Its adoption or adaptation by other crusaders is evidence of the value attached to it in quarters experienced in publicity.

"Square deal" propaganda advances in an ordered manner and with a topicality of appeal that strikes the most casual reader as impressive in a scheme of national magnitude such as this. It is directed by a special committee of the Railway Companies' Association representing all the groups, but the actual mechanism for carrying out the committee's plans on each system is the responsibility of the four publicity officers working in concert.

Press publicity has been a vital element in the campaign. At its outset, manifestoes appeared in newspapers as advertisements spread across three columns. Every time an announcement was made, 136 national and provincial morning and evening newspapers were used as well as the principal periodicals. On one occasion 788 weekly newspapers also carried a manifesto. Uniformity of appearance was assured by the manufacture, in London, of stereotypes which were distributed throughout the country. This called for the utmost co-operation of the traffic departments, with whose willing assistance and express train services the arrangements were carried through without a hitch. Each of the manifesto advertisements was reproduced as a handbill, 2,000,000 of which were distributed to the public. A new step in the press campaign was taken on February 9, when for the first time the national morning newspapers carried a small advertisement quoting the total decline in railway goods traffic receipts during the previous week. From that date the same message is being displayed in prominent positions at stations in poster form, with the weekly figures boldly presented in red.

The governing principle in organising the campaign is that each new release of posters, handbills, and every other form of printed propaganda, must replace earlier issues throughout the country on a single date, so that a traveller might ride from Penzance to Wick and still read the same message at every station and halt. Periods of display average ten days, but are sometimes much shorter in the interests of topicality, of which the Christmas and New Year messages were examples. To ensure this ordered "change of programme" being carried out with the smallest chance of confusion, every item of "square deal" advertising has a code number. Instructions are sent to stationmasters and others responsible for displaying the material informing them a day or two in advance of the numbers and titles of the new posters, handbills, notices, or leaflets that they are going to receive. Material to be removed on receipt of fresh supplies is similarly enumerated, together with a notification of any poster, bill, or other form of propaganda that is to be retained until further notice. The position that should be arrived at when these instructions have been observed is finally summarised in a list of the code numbers of the posters and notices for the coming stage of the campaign.

An important item of "square deal" propaganda that was not subject to periodical changes has been the "Clear the Lines" booklet, 2,000,000 copies of which have carried the railway case into the homes and




ALL RIGHT IN GRANDFATHER'S DAY
Ancient regulations block the line to progress on the railways.

The RAILWAY CRISIS
There is grave danger of an economic breakdown in the Railway system of this country unless immediate action is taken to free it from old-fashioned laws.
THE NEED IS URGENT
For the full facts write:
THE RAILWAYS, FIELDEN HOUSE, WESTMINSTER, S.W.1
Bringing it home to the public—literally. The above message is tucked under the string of parcels delivered by railway




*Humour in the service of the "square deal." The poster on left was reproduced by courtesy of the "Daily Dispatch"*

thoughts of the public in a manner that cannot be achieved by poster and handbill advertising. It is the function of the "square deal" slogans to encourage an interest and curiosity that will find satisfaction in "Clear the Lines," and it is only when he has made the voluntary effort of taking a copy of this booklet himself or studying one that has been handed to him, that the member of the public is invited to lend active support to the railway claims by making himself a propagandist on their behalf in whatever circles he has influence.

Special care and study has been directed to the choice of sites for the

TRAINS IN CHAINS
THESE ARE THE REASONS WHY BRITISH RAILWAYS ARE FACING AN ECONOMIC BREAKDOWN
1. Because British Railways are bound with the chains of out-of-date legal restrictions created when they had a monopoly of the nation's transport. That monopoly NO LONGER EXISTS.
2. Because legal delays and out-of-date restrictions and methods of fixing rates are driving business away from the railways. Fettered railways cannot compete with unfettered businesses.
YOU CAN HELP TO FREE THE RAILWAYS FROM THESE CRIPPLING CHAINS
For further information write to
THE RAILWAYS, FIELDEN HOUSE, WESTMINSTER, S.W.1
MENU
LINCOLN
the Lindae of the Romans, who surrounded it by a wall pierced by four gates. One of these, Newport Arch, remains as the only example in England of a Roman gateway through which traffic still passes.
The Cathedral is one of the glories of England, perfect in beauty, in construction, in colour and in dignity.
Lincoln Castle is one of the eight known to have been founded by the Conqueror himself.
LONDON & NORTH EASTERN RAILWAY

*An L.N.E.R. restaurant car menu, carrying the customary cover design on the front and an arresting "square deal" slogan on the back*

# THE RAILWAYS ASK FOR A SQUARE DEAL

Much is being said about the poor financial position of the Railway Industry.

The real position can be stated in a few short sentences.

1. In fixing rates and conditions for carrying merchandise the Railways are bound by statutory controls and regulations which have lasted a hundred years and grown more rigid with age.
2. *No other form of goods transport is subject to such restrictions or anything comparable with them.*
3. Moreover, no other form of transport has or can have such basic duties and responsibilities to the State as those which the Railways must bear at all times and more especially in times of national emergency.
4. It will be impossible for the Railways adequately to discharge those national services and duties unless they are now set free to put their house in order, and to run their business on business lines.
5. *The Railways have no desire whatsoever to interfere with other transport services or with any other business.*
6. They merely want the chance to put themselves right so that they may be able to meet fair competition in a fair way. The main transport services should all start equal.
7. The time honoured shackles which fetter the Railways alone and well nigh strangle their goods traffic must go.
8. *And they must go before it is too late.*
9. A short Act of Parliament is required this Session to meet a crying national need.

**The Railways ask for a Square Deal**

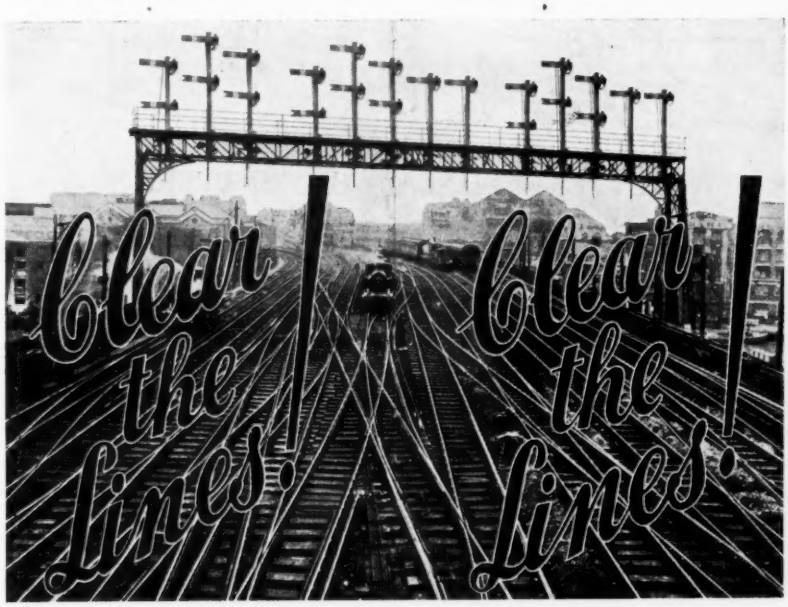
ISSUED BY THE RAILWAY COMPANIES' ASSOCIATION

*The first manifesto of the railway companies was published as an advertisement in every newspaper in the country as well as appearing in poster and handbill form*

display of propaganda, and considerable use is made of notices placed under station clocks, where they are bound to catch the eye of the majority of travellers. Booking office windows have carried labels reminding the purchaser of a ticket to ask for his copy of "Clear the Lines," and slogan slips are tucked under the strings of parcels. Thus the campaign involves more than the production of posters and handbills in standard sizes for sticking on hoardings or hanging on notice boards. Streamers, slips, and labels are produced in a wide range of dimensions to cover varying requirements, and issued as requisitioned by the companies in accordance with the facilities they have at their stations for special forms of display. A more recent medium for printed advertising in the campaign is the restaurant car menu, which is adopted by the companies when practicable. On the L.N.E.R., for example, the message is reproduced in place of the map of the company's system on the back of the card. Menu messages are changed at fortnightly intervals.

The latest item of propaganda is the "urgent message to the public" exhibited as a poster at the stations of all companies, and signed by the chairman of the company on whose premises it is displayed. This is believed to be the first occasion on which the chairmen of the British railways have made a direct appeal to the public through the medium of the poster.

The personal touch in advertising has been experimented with on some occasions, such as when station loudspeakers have been used to broadcast "square deal" publicity to crowds of travellers at holiday seasons. A few




*Covers of "Clear the Lines," of which 2,000,000 copies have been distributed*

weeks ago, with the co-operation of London Transport, uniformed staff of the main-line railways were stationed at 30 London tube and Underground stations, and in approximately a week distributed 69,000 copies of the " Clear the Lines " booklet to business passengers in the peak periods. On all railways, volunteers with experience of public speaking have been recruited for giving lectures to local bodies. Every speaker receives a weekly bulletin of information and hints prepared by the British Railways Press Office, which organisation also supplies the press with the text of important addresses and lectures and general editorial information.

# AN URGENT MESSAGE TO THE PUBLIC

## From Sir RONALD MATTHEWS

Chairman of The London and North Eastern Railway

The Railways cannot always give the traders the efficient service they would like to give. They can only offer the service they are permitted to give.

The goods service you are at present receiving from the Railways may not therefore be as perfect as you or the Management and the Staff would wish.

The Railways want to give the Public even better service; they cannot do so until released from obsolete and shackling statutes which are strangling their economic life.

We want liberty to give the best service.

**HELP US TO DO SO**

*A new poster introduced last week, signed by the chairman of the company on whose premises it is exhibited*

# DO YOU KNOW THAT

## TOTAL RAILWAY GOODS TRAFFIC

# FELL £128,000 LAST WEEK?

## THE NEED OF THE RAILWAYS FOR EQUALITY WITH THEIR COMPETITORS GROWS MORE URGENT

# EVERY WEEK

ISSUED BY THE RAILWAY COMPANIES' ASSOCIATION

*Another new poster introduced last week; the figures are to be changed weekly in accordance with the railway traffics*

Public reception of the campaign can be measured in various ways, and an encouraging one is the number of spontaneous resolutions supporting the railway case passed by chambers of commerce. Trading interests have on occasion demonstrated their appreciation of the pulling power of the " square deal " slogan by asking permission to share it. One such request came from a pastrycook with an idea for a " square deal " window display designed to benefit both parties. In the domain of large-scale enterprise, a motor-car manufacturer now announces that purchasers of his products are assured of a " square deal." A constant flow of correspondence amounting to some thousands of letters from interested, critical, or curious members of the public is received at the headquarters of the Railway Companies' Association, where every letter is acknowledged and appropriately answered. Over 60,000 individual letters accompanying copies of documents, and signed by the Secretary, have been sent out on the initiative of the association. Whatever its outcome, the " square deal " campaign is the biggest concerted effort in the history of British railways to establish an understanding between themselves and their customers on a matter of economic policy.

## STAFF AND LABOUR MATTERS

### Road Haulage Wages Boards

All the area wages boards to be established under the Road Haulage Wages Act, 1938, have now been formed and progress is being made towards the formation of the Central Wages Board, but until each of the area wages boards has held its first meeting it is impossible for the necessary number of employers' and employees' representatives to be nominated to the Central Wages Board. Practically all the area boards have already held their first meeting and it is understood that the independent members of the central board are now being chosen, and the first meeting of the central board is likely to take place towards the end of February. Mr. R. J. Humphreys has been appointed Secretary to each of the area wages boards.

### Railway Shopmen

After the discussion by the National Railway Shopmen's Council on January 11 of the claims for shorter hours and improvements in rates of pay and conditions of service of railway shopmen, the executive committees of the trade unions that are parties to the Negotiating Machinery, met in London on January 30 to consider the position. Writing in the *Railway Review*, Mr. Marchbank states that the National Union of Railwaymen and the other unions concerned have decided to bring the claims before the Industrial Court, and that discussion is now taking place upon the terms of reference which will cover the issues upon which the unions hope to get the Industrial Court to adjudicate.

### Engineering Wages

The claims for shorter working hours and improvements in rates of pay and conditions of service which the Amalgamated Engineering Union and the Confederation of Engineering and Shipbuilding Unions submitted to the Engineering and Allied Employers' Federation, and which (as recorded in our issue of December 9) were considered at meetings on December 6, are to be discussed further at a conference between the employers and the unions on February 28. As on previous occasions, it is understood the employers will meet the Amalgamated Engineering Union and the Confederation of Engineering and Shipbuilding Unions separately.

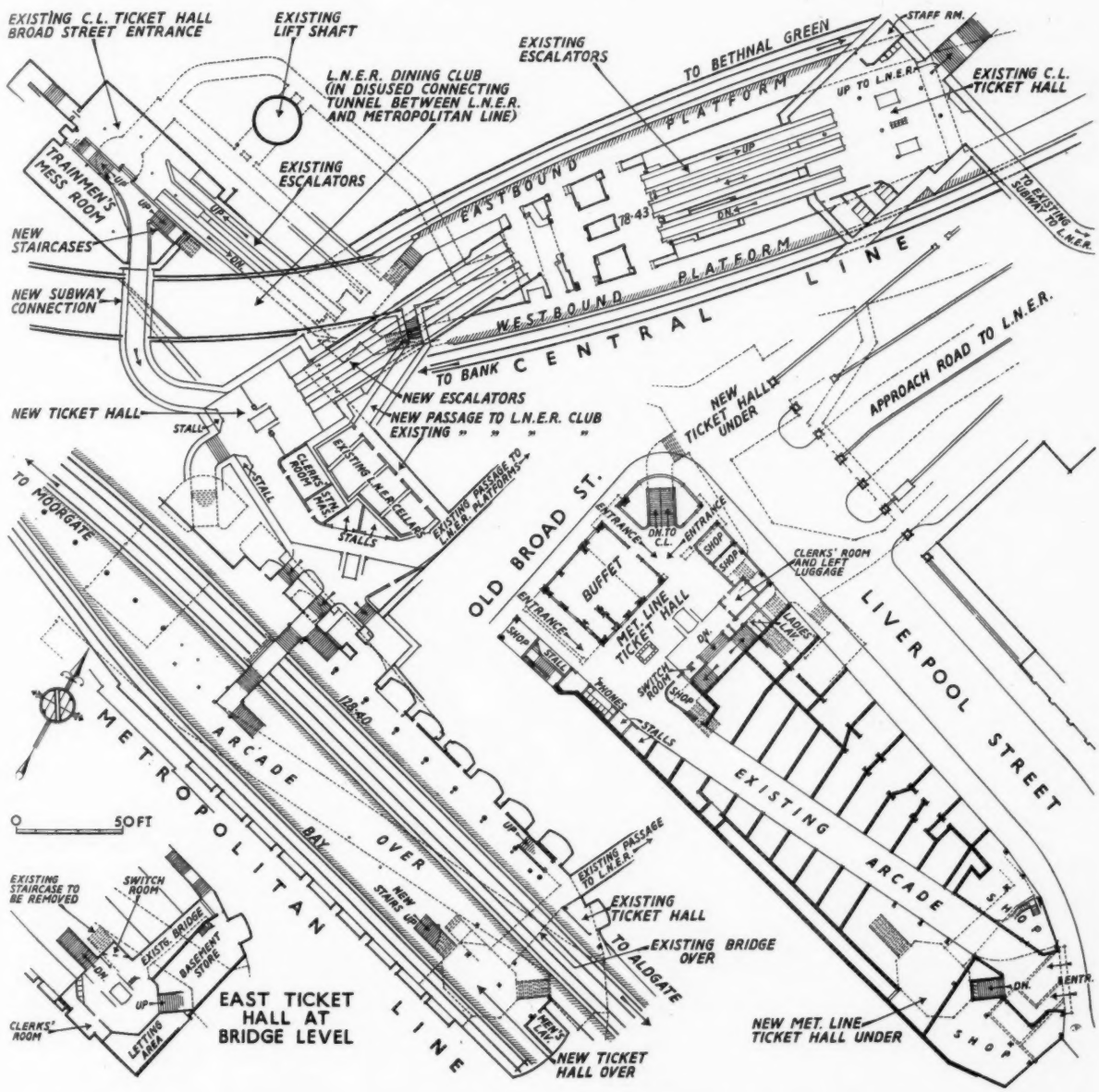
# Enlargement of Liverpool Street Station, L.P.T.B.

Liverpool Street Underground station is about to be reconstructed and enlarged. The contract for the preliminary work has been let to Kinnear, Moodie & Co. Ltd. Liverpool Street is already one of the busiest stations on the board's system. In the last five years the number of passengers using the station annually has increased by 10 millions to 40 millions. When the extension of the Central Line to Essex is in operation it is expected that the rate of increase will be even greater.

At present there is no convenient underground interchange at Liverpool Street between the Central and Metropolitan Lines. The board has decided, therefore, to build a new ticket hall beneath the junction of Old Broad Street and Liverpool Street similar to that at Leicester Square. A new flight of escalators will lead direct to the Central Line platforms, and short passages will connect with the Metropolitan Line station and with the Broad Street and Liverpool Street main line stations. This will enable passengers to change from any one line to another without crossing the street.

The two Metropolitan Line ticket halls and the ticket hall beneath the entrance to Broad Street main line station will be renovated. The new main ticket hall beneath Liverpool Street will form a distributing centre with direct underground connections to all lines. There will be a new entrance on the corner of Old Broad Street and Liverpool Street into the existing Metropolitan Line ticket hall, with steps leading down to the main hall beneath the roadway.

The first and most difficult task with which the engineers are faced is the diversion of two main sewers which at present meet in the middle of the site of the new ticket hall.




*Plans of the new arrangements at Liverpool Street station showing the platforms of the Central and Metropolitan Lines, and the improved booking and access facilities*

# MINISTRY OF TRANSPORT ACCIDENT REPORT

## Elderslie, L.M.S.R.: September 10, 1938.

Colonel A. C. Trench was the Ministry of Transport Inspecting Officer who inquired into the collision on September 10 last at Elderslie, L.M.S.R., and his report has recently been issued.

At 2.50 p.m. the 2.30 p.m. passenger train, St. Enoch (Glasgow) to Largs, ran into ex-Caledonian 4-4-0 No. 14505, standing in Elderslie station and waiting to be sent across to the Paisley (Greenlaw) line. The train consisted of four bogie coaches, with steel underframes and special shock absorbing buffers, drawn by L.M.S.R. Standard " 2P " 4-4-0 engine No. 650, running at 25 to 30 m.p.h. Both the light engine and the train had approached over the Canal line from Paisley Central, which comes in on a curve near No. 1 signal box. The light engine was standing 105 yd. west of that box and in full view, at a setting-back ground signal. A driver approaching on the Canal line could, by looking behind the box, get a glimpse of it for about 250 yd., but it would be difficult to make certain whether it was on the platform line or in a siding. Vision would then be obstructed until the approaching train was almost level with the box, 150 yd. from the disc, when the standing engine would be in full view. Gradients are negligible. It was a clear day with dry rail. About 109 passengers suffered injuries, mostly of a minor nature, as did the train driver; the passengers were given first aid at the time of the accident, or complained later. One died from meningitis brought on by the injuries. Such injuries as were caused by broken glass were attributable solely to breakage of picture frames, mirrors and two shoulder lights. There was considerable displacement of partitions and seats.

Driver Robson, of the light engine, had been instructed to proceed from Crookston to Paisley *via* Elderslie. Passing No. 1 box he called out that he was to go to Paisley (Greenlaw) and stopped at the ground disc at 2.31 p.m. After other trains had passed on the main line, he eventually saw the one he was to work forward from Paisley, so sent his fireman, Dalrymple, to advise the signalman that it had just passed and he was therefore behind it. Dalrymple, a few yards from the engine, saw the Largs train coming; he ran back and called to Robson to move, but the engine was hardly doing so when the collision occurred. Driver Rourk, of the passenger train, looking past the back of the box, saw the standing engine but was uncertain what line it was on. All signals were " off." He made a full brake application on seeing where it was, and estimated he struck it at 12 to 15 m.p.h., but from the damage done and the distance the engines ran buffer-locked (65 yd.) Colonel Trench considers the speed was not less than 20 m.p.h.

Signalman McLellan, No. 1 box, accepted the light engine under a " main line " description and offered it to No. 2 box, but cancelled it forward at 2.33 p.m., after learning what the engine was to do. He had no doubt about the procedure, which was not an infrequent one.

He placed his signals to danger but did not lever-collar the home signal nor use a hook plate on his accepting block plunger. He should have done so and frequently did, but suggested he was busy with other traffic, and this led him to omit the precaution. He could not find a train interval long enough to allow the engine to cross without causing delay. Six trains passed, fairly well on time, from 2.32 to 2.47 p.m. McLellan accepted the passenger train at 2.44 p.m., offered it forward and lowered his signals in due course; unfortunately he did not look at the starting signal as he cleared it or he could hardly have failed to see the engine. He realised his blunder when the train was almost at the box, too late to put out a red flag or put down detonators.

Booking Lad Pollok generally confirmed this evidence. Going downstairs at 2.40 p.m., he saw the engine and knew it had been there for 10 min., but it did not occur to him to remind the signalman. The collision occurred as he was returning.

### Inspecting Officer's Conclusions

As is so frequently the case, this accident would not have occurred but for simultaneous failures by two men, McLellan, who overlooked the presence of the light engine, and Robson, who failed to send his fireman to the signal box as laid down in Rule 55. Both men frankly admitted their failure.

The signal box is provided with the ordinary lever collars and small fibre hook plates, which can be hung in front of a block instrument as a reminder against accepting another train. McLellan should have used either or both. The busier a signalman is the more important it is to take all possible advantage of any mechanical reminder available. McLellan is 43 and has a clear record. Driver Robson admitted he should have sent his fireman to the signal box, but said he was expecting to get away any moment, was in full view of the signalman, and satisfied that the latter was aware of his destination. The procedure prescribed by Rule 55 is, however, quite definite; there was no reason why he should not have complied with it; he must have been waiting over 15 min. Robson is 41 and has a clear record.

Fireman Dalrymple should, in the absence of instructions from Robson, have asked the latter about carrying out Rule 55, the terms of which he knew, but he also said he was expecting to get away any minute. He must bear some share of the blame, but in view of his limited experience, two months as passed fireman, can be held responsible to a minor degree only.

Although the range of visibility seemed to provide adequate stopping distance at the speed at which Driver Rourk estimated he was travelling, allowance must be made for the inevitable lag in application of the brake on seeing an unexpected obstacle ahead. There are no grounds for attributing to him any lack of alertness.

### Recommendations and Remarks

As the line is in full view of the signalman only about 100 yd. away, the provision of a track circuit could not be recommended. In this and other accidents minor injuries have been due to broken glass from the photograph frames in compartments; these are of course much thinner and must be less efficiently supported than the ordinary window glasses; it might be worth investigating whether this risk could be eliminated by the provision of some other form of transparent covering for these frames in place of glass, ensuring, of course, that any substitute did not involve fire risk. The company should consider this matter with a view to finding whether there is any suitable substitute for glass in photograph frames in new and reconditioned stock. There is no justification for suggesting safety glass in these places.

An unusual feature was that both rails were bent downwards a few inches beyond the point of impact, which was about 9 ft. beyond the running-on end of the rails. The two rails had about $1\frac{1}{8}$ and $1\frac{1}{16}$ inches depression below the horizontal line and the adjacent chairs were broken.

---

B.S.S. FOR TENSILE TESTING OF METALS.—A revised B.S. Specification, amplified and divided into three parts, has been issued. Part 1 includes definitions of the more commonly used terms in tensile testing. Part 2 sets out the standard forms of tensile test-pieces, which include flat test-pieces for material from 10 S.W.G. thick upwards, round test-pieces, test-pieces from bars of various shapes, with separate forms of test-pieces for use in the case of tubes and cast-iron products. Part 3 deals with methods of tests. Copies of this specification (B.S. 18) can be obtained from the British Standards Institution, 28, Victoria Street, London, S.W.1, price 2s. 2d. post free.

# C.T.C. Patent Action

## Abstract of the judgment of Mr. Justice Morton in dismissing the action brought by the General Railway Signal Co. Ltd., against the Westinghouse Brake & Signal Co. Ltd.

Judgment was given on February 1 by Mr. Justice Morton in the Chancery Division of the High Court of Justice in the matter of the action brought by the General Railway Signal Co. Ltd., against the Westinghouse Brake & Signal Co. Ltd., in which the plaintiff company claimed damages for alleged infringement of its patent and an injunction to restrain further infringement. The hearing lasted 38 days and (as we recorded briefly on page 200 of our issue of February 3) Mr. Justice Morton held that the claims in the plaintiff company's specification were so ambiguous and obscure that they did not specifically or clearly define the nature and scope of the monopoly claimed and that no infringement had been established.

The plaintiff company was represented by Mr. Lionel F. Heald, K.C., Mr. J. P. Graham, and Mr. F. J. Carroll (instructed by Messrs. Crane & Hawkins); and the defendant company by the Hon. Sir R. Stafford Cripps, K.C., Mr. Kenneth R. Swan, K.C., and Mr. H. J. W. Bliss (instructed by Messrs. Linklaters & Paines).

An interesting feature was that, during the hearing, Mr. D. M. Robinson, Ph.D., B.Sc., sat with the judge as electrical assessor.

The substance of the matter was summarised by Mr. Justice Morton in the course of his judgment when he explained that in or about the year 1932 the defendant company manufactured, installed, sold, and supplied, for use on the Metropolitan Railway between Wembley Park and Stanmore stations, an installation of signal control which provided a system known as Centralised Traffic Control, referred to in the Pleadings as a "C.T.C. Installation." His Lordship remarked that a description of this installation appeared in THE RAILWAY GAZETTE, March 17, 1933.

On September 17, 1935, the plaintiff company issued the writ in this action claiming damages for infringement of the patent in suit and an injunction. It appeared that on August 6, 1926, the General Railway Signal Company, a corporation organised under the laws of the State of New York, applied for letters patent in the United Kingdom in respect of an alleged invention which was described in the heading of the complete specification as "improvements relating to Signalling and Power Operated Switch Systems for Railways." The above-mentioned company applied as assignee of Mr. Sedgwick North Wight, a citizen of the United States of America. The complete specification was accepted on November 7, 1927, and Letters Patent in respect thereof were granted, and numbered 268,822. This is the patent in suit in the present action. It was admitted that the General Railway Signal Co. Ltd., a British company, was the registered legal owner thereof.

A point of legal interest in connection with the matter was the useful purpose served by directions given under sub-clause 2 (*b*) of Order 53A, Rule 21A, in clarifying and limiting the issues and thereby reducing the length of the trial. We make brief reference to this in an editorial article on page 254, but it may be observed here that even with the economy in time effected by these means the hearing of this case was necessarily very protracted, and in fact occupied the Court on no fewer than 38 days. Certain of these Orders related to giving the plaintiff company liberty to proceed with an application to amend the complete specification.

### The Judgment

In giving his judgment, Mr. Justice Morton stated, in what appeared to him to be their proper order, the questions which he had to answer in this action, as follow:—

1.—What is the true construction of the patent in suit, in its original form, and in particular what is the true construction of claims 1 and 2? By reason of the agreement between the parties no question arises as to any of the other claims.

2.—Was the patent in suit, in its original form, invalid upon all or any of the grounds stated in the Pleadings and particulars? These grounds are:—

(*a*) That the alleged invention, the subject of the patent was not new on August 6, 1925, but had been disclosed in the United Kingdom in certain publications and by certain alleged prior users.

(*b*) That the said alleged invention was obvious and did not involve any inventive step having regard to (1) general common knowledge in the art of controlling railway signals and points on August 6, 1925, and (2) the public knowledge existing on that date in regard to the said art, and disclosed in the said publications and alleged prior users, and plans and descriptions relating thereto.

(*c*) That claims 1 and 2 in the patent suit are ambiguous. It is said that these claims do not sufficiently or clearly ascertain the nature and scope of the monopoly claimed.

He thought he must arrive at a conclusion upon these two questions before considering whether he should or should not allow the amendments. The other questions which arose, after he had decided questions 1 and 2, were as follow:—

3.—Ought I to allow in the exercise of my discretion the amendments, and if so to what extent and upon what terms?

4.—Does the defendant's installation infringe Claim 1 or Claim 2 of the patent in suit, reading these Claims with such amendments (if any) as I allow? It was not contended at the trial that any claim had been infringed other than Claims 1 and 2.

The defendant called no evidence, for Sir Stafford Cripps, in his speech for the defendant, said: "The plaintiff's witnesses have been most generous in the admissions they have made, and I cannot see that there are any other facts that are required for the proof of the defendant's case."

In dealing with the prior art, the judge said he was assisted by a mutual admission by the parties, which was expressed, at the beginning of the 17th day of the trial in the following terms: "The plaintiff and the defendant are respectively prepared to admit for the purpose of this case that the common general knowledge of American signal engineers as to the mechanical and electrical devices and appliances in use or available for use in the year 1925 for signal switch operation and control, and as to the contents of certain general treatises, was equally common general knowledge of British signal engineers at the said date." This admission was made subject, so far as the plaintiff company was concerned, to a reservation regarding the common general knowledge of one American publication and one American installation and it was not prepared to admit that these particular items were a matter of common general knowledge among British signal engineers at that date.

His Lordship then reviewed the prior art up to August 6, 1925, and mentioned the following: 1.—The single manually-operated lever placed near a switch and having direct mechanical connection to such switch, the signal being merely a target which indicated to the train crew the position of the switch; 2.—Levers grouped together at a convenient point and connected mechanically to their respective switches; 3.—Mechanical interlocking and the Saxby & Farmer interlocking frame; 4.—Semaphore signal arms; 5.—Block system and the staff or token system; 6.—The home and distant signals; 7.—Two-position and three-position signals; 8.—Train-order system in the United States; 9.—Track circuit; 10.—Detector locking and approach locking; 11.—Automatic signalling; 12.—"Permissive" as distinct from "absolute" or "stop and stay" signals; 13.—Adaptation of the automatic system for two-way working on a single track; 14.—Relays; 15.—Absolute-permissive-block system; 16.—Power interlocking, all-electric and pneumatic systems; 17.—Indication locking and check locking; 18.—The placing of relays near the switch machine to control the closing of a local power circuit to the switch machine; 19.—Approach locking; 20.—"Time release"; 21.—Low-voltage switch machines used in conjunction with polarised relay operated over a single line wire and return from the signal box; 22.—The placing of all the safeguards in the field instead of being carried back to the signal box, resulting in a system of remote control in which the safeguards are carried out in

the field. In the course of his review, the judge quoted some of the standard text books on signalling, and an article in *The Railway Engineer* of June, 1922.

" In considering the patent in suit," said his Lordship, " I must bear in mind that I am primarily concerned with claims 1 and 2. These claims must, of course, be read in the light of the specification as a whole, including the drawings, but what I am considering is the alleged invention which is actually claimed in claims 1 and 2 and not the invention which the patentee might have claimed. I have been urged, however, by counsel for the plaintiff to express my views as to whether an invention is disclosed in the body of the specification and in the plan attached thereto. In my opinion the particular system described in the body of the specification and in the plans was an invention. I must not forget, however, that my first task is to construe claims 1 and 2 in their original form; and although an invention is, in my view, disclosed in the specification and drawings, it does not follow that this is the invention which is claimed in claims 1 and 2.

" Before reading the claims, I should point out that the words *for single or double track working* in the specification are of importance. They show that *the invention* is not confined to two-way working over a single track. Its features may be applied to such working, but they are (as I read this phrase) equally applicable to one-way traffic over a single line or one-way traffic on each of two double lines. I now come to Claim 1: ' A system for the remote operation of railway points or switches having power operated switch machines in which for each remotely operated switch manually controlled means at a control office are arranged to control the operation of a relay adjacent the switch over a single line wire and a return wire (or an earth return) said relay controlling the switch machine and the signals governing traffic over the switch and being interlocked with such signals whereby a manually initiated operation of the switch machine is prevented if traffic conditions are adverse to such operation.' "

His Lordship had to construe the meanings of the following:—

(*a*) " Remote operation."
(*b*) " A relay adjacent the switch."
(*c*) " Controlling."
(*d*) " Signals governing traffic over the switch."
(*e*) " Interlocked with such signals."
(*f*) " Whereby a manually initiated operation of the switch machine is prevented if traffic conditions are adverse to such operation."

This last phrase gave rise, in his view, to grave difficulties. Mr. Heald contended that the effect of this phrase (introduced as it is by the word *whereby*) was to make Claim 1 a claim in which the monopoly claimed was defined by reference to the result. He said that the word *whereby* referred to all the preceding words of the claim and that what was being described was a system (having various integers) whereby a particular result was obtained. Counsel for the defendant company, on the other hand, contended that the word *whereby* referred to the interlocking of the relay with the signals. They pointed out that there was no other integer in the Claim which could *prevent* a manually initiated operation of the switch machine, and they said that the word *whereby* was naturally linked up with the integer which immediately precedes it, namely, the interlocking of the relay with the signals. " In my view," said his Lordship, " this argument is well founded. If this is so, the monopoly claimed is not defined by the result achieved."

He had also to construe the meaning of:—

(*g*) " If traffic conditions are adverse to such operation."

The use of this phrase implied that there were certain conditions of traffic which were *adverse* to the operation of the switch machine. " Is it possible," he said, " to ascertain with any certainty what are the adverse traffic conditions referred to here? If the phrase had had a clear meaning in the art, I should have felt inclined to give it that meaning in Claim 1, but this is not so. Nor does the phrase *adverse traffic conditions* occur anywhere in the body of the specification. It is also clear from the evidence that in any switch and signal installation the conditions under which it would be considered safe, by signal engineers, to allow the switch to be moved would vary according to the conditions."

He found himself quite unable to say whether approach locking was included in this integer of the claim or whether, if approach locking was included at all, the integer included every kind of approach locking or only the particular type of approach locking which was described in the body of the specification and the drawings. In his view, the phrase which he was now considering was an ambiguous phrase. Not only was it ambiguous in itself, but, being ambiguous, it entirely failed to define what type of interlocking was referred to in the phrase which immediately preceded it.

### Failure of Claim 1

" It is, in my view, quite impossible for any person skilled in the art, and desiring to instal a system for the remote operation of railway points or switches, to know whether he is or is not infringing the monopoly claimed by Claim 1. He cannot tell whether any particular type of interlock between the control relay and the signals is or is not within that monopoly. He cannot tell whether approach locking generally, or any particular type of approach locking, is or is not an integer of the claim, and he is left in the dark as to the precise meaning of the words *if traffic conditions are adverse to such operation*. I am of opinion that the patentee has failed sufficiently and clearly to define the scope of the monopoly claimed in Claim 1. The result is that this action, so far as it is based on an alleged infringement of Claim 1, must fail."

His Lordship then turned to Claim 2, which read as follows: " The combination of a railway switch, a power operated switch machine controlled from a distant control office by a relay adjacent the switch for operating said switch and signals governing the traffic over the switch which are controlled automatically in accordance with traffic conditions and by said relay, the control of the relay being such that the signals may be operated from the control office to give indications not more favourable than actual traffic conditions."

Counsel for the plaintiff company, he said, frankly admitted that the original claim was open to grave objections. He (the judge) preferred to say that the claim would cover cases in which no provision was made for preventing operation of the switch machine in any circumstances; thus the monopoly claimed was wider than the alleged invention. Further, he thought that Sir Stafford Cripps and Mr. Swan were right when they said that this claim was anticipated by a United States patent of 1919 under the name of Bushnell. He thought also that there were strong grounds for contending that the last four lines of this claim gave rise to ambiguity, but this was a matter which it was unnecessary for him to discuss. He entertained no doubt that claim 2 in its original form was not a claim which could be upheld.

Having construed claims 1 and 2 in their original form and having expressed the view that neither of these claims was valid, he had answered the first two of the four questions set out in the early part of this judgment. He must now answer the third question, namely: " Ought I to allow in the exercise of my discretion the amendments, and if so to what extent and upon what terms? "

It was desired, he said, to strike out the whole of Claim 2 and to substitute for it a claim in other words. He thought there was one very simple reason why he would not allow this amendment. If he was right in his view that the phrase *if traffic conditions are adverse to such operation* was a phrase which gave rise to uncertainty and ambiguity, it would clearly be wrong for him to allow the insertion of an amended claim which not only contained this same phrase but used this phrase for describing the *combination* which was being claimed. The description of the *combination* also included the phrase *not more favourable than is warranted by traffic conditions*, which occurred in slightly different words in the original claim 2 and which inclined him to the view that the claim was ambiguous. " Even if I saw no other reason for refusing to allow this amendment (and I am far from saying that I see no other reason) this seems to me, in itself, a good

reason why I should refuse to allow the amendment, and I do refuse to allow it."

His Lordship also refused to allow any of the other amendments which had been objected to. An exception was made with regard to one of these amendments, because he wished to know whether the plaintiff in the light of his judgment still insisted on requesting him to consider the granting of this particular amendment.

"Having regard to the views which I have already expressed," he said, "it is apparent that this Action must fail, and that the Motion also fails in substance."

His Lordship then embarked upon a brief description of the defendant's installation at Stanmore and expressed certain views on the issue of infringement. He thought it would be a waste of time if he considered Claim 2 in this connection. It was not seriously contended that Claim 2 could be upheld in its original form, and he did not think he would serve any useful purpose by considering whether the defendant company had infringed Claim 2 in its amended form, on the hypothesis that the amendment was allowed. Whatever meaning might be placed upon the words *and being interlocked* in Claim 1, he did not see how the defendant had infringed Claim 1. In his view the defendant's installation did not answer the earlier part of the description of the invention in Claim 1.

The result was that the Action failed, and the Motion asking for liberty to amend also failed.

## Interavailability of Tickets

Mr. J. C. Chambers, Road Transport Liaison Officer, Southern Railway, read to the Institute of Transport in London on February 13 a paper on the Interavailability of Tickets by Rail, Road, Sea, and Air. He said that the phrase "interavailability of tickets" had been termed "a good example of bad invention," and had been analysed to mean that "tickets were able to use each other." An alternative term, "Rover" tickets, however, was not apt in existing circumstances, as interavailability facilities applied only to the choice of mode of transport on the return journey. Mr. Chambers thought that the success of interavailable systems would be enhanced if a better name could be found to describe the facility.

In its most elementary form it existed between the various Green Line services of London Transport, similar to the arrangement with many railway return tickets, where the passenger could return from a different point on another service, paying excess if necessary. Mr. Chambers referred to the Channel Islands service, where an extensive application of the facility was in force. Passengers could return from these islands either by G.W.R. steamer to Weymouth and G.W.R. train to Paddington, or by Southern Railway steamer to Southampton and Southern Railway train to Waterloo. He then instanced a case of Anglo-Continental interavailability—between London and Milan—where the traveller had the choice of four routes. He knew of only one case of interavailability on long-distance railway routes in America. An early application of the facility was that made in 1866 between the London and Margate Saloon Steam Packet Company and the Great Eastern Railway which allowed steamer passengers for Margate to proceed by train to Blackwall Pier and there pick up the steamer.

The Great Western Railway inaugurated its road services in 1903, and a few years later introduced interavailability between its buses and trains. Such facilities, however, did not become general until 1928, when, after the passing of the four railway Road Transport Acts, the co-operation between the railways and their associated road companies led to the general adoption of widespread interavailable facilities. He quoted the following figures:—

| | Points between which inter-availability is operated | Passengers transferred between rail to road in 1937 |
|---|---|---|
| L.M.S.R. | 900 | 576,812 |
| L.N.E.R. | 969 | 354,235 |
| G.W.R. | 243 | 120,493 |
| S.R. | 232 | 88,318 |
| | 2,344 | 1,139,858 |

After detailing some interavailable facilities between surface transport undertakings and air lines, Mr. Chambers said that there was some interavailability between rail and road in the U.S.A. One enterprising American railway not only provided complete interavailability between its rail services and those of its subsidiary road transport company, but also gave interavailability between rail and bus in one direction and canoe in the other! In Germany the facility was fairly general, but in France the serious position of the railways had complicated matters.

Mr. Chambers then passed to the subject of supplements. He explained that they were not usually payable when the fares by the alternative form of transport were the same as those by the form of transport utilised on the initial journey. He thought that his having to pay a trivial supplement, in cases where there was a variation in fare, tended to influence the prospective passenger against the form of transport which made the imposition. Mr. Chambers felt that a universal formula for calculating supplements would lead to a considerable development of additional traffic. He spoke next of the procedure involved in issuing and checking interavailable tickets, and then discussed the legal aspect. Some of the more important legal problems connected with interavailability, such as liability in the case of death or injury, had now been settled. The speaker thought that, provided there was a will to co-operate, there were greater possibilities of extending interavailable facilities, now only semi-developed. In concluding, he qualified his earlier remarks about the inept name by saying that there was a great opportunity for the publicity expert who could not only think of a better name for the facility but could simplify it and sell it to the man in the street.

In the ensuing discussion, Mr. Sidney E. Garcke mentioned his experience in connection with the East Kent Road Car Co. Ltd., when the management had hesitated to apply interavailable facilities with the Southern Railway for the Margate traffic, fearing it might not be able to cope with any additional traffic that might accrue. After taking the plunge, however, the management was rewarded by a reduction in operating costs.

## Exports of Railway Material from the United Kingdom in January

| | Jan. 1939 | Jan. 1938 |
|---|---|---|
| | £ | £ |
| Locomotives, rail | 137,223 | 131,904 |
| Carriages and wagons | 205,142 | 206,848 |
| Rails, steel | 59,321 | 97,959 |
| Wheels, sleepers, fishplates and miscellaneous materials | 167,753 | 207,358 |

Locomotive and rail exports included the following:—

| | Locomotives | | Rails | |
|---|---|---|---|---|
| | Jan. 1939 | Jan. 1938 | Jan. 1939 | Jan. 1938 |
| | £ | £ | £ | £ |
| Argentina | 15,123 | 9,049 | 1,376 | 7,148 |
| Union of South Africa | —* | —* | 16,432 | 27,590 |
| British India | 42,722 | 22,751 | 11,401 | 6,225 |

* Figures not available

# QUESTIONS IN PARLIAMENT

### Barking Level Crossing

Mr. J. Parker (Essex, Romford—Lab.), on February 8, asked the Minister of Transport whether he was aware that there was a strong demand for the replacement of Ripple Road level-crossing, Barking, by a bridge; and what steps were being taken to effect this improvement.

Mr. Leslie Burgin (Minister of Transport): I understand that the Barking Borough Council are not unmindful of the desirability of replacing the level crossing by a bridge. They do not however consider the scheme to be so urgent as other work in the borough, especially as it is possible for traffic to avoid the crossing by any one of four alternative routes. For the present, it is proposed to improve pedestrian facilities at the crossing by the provision of a separate footway.

### Level Crossing to be Eliminated

Mr. A. Hills (York, West Riding, Pontefract—Lab.), on February 8, asked the Minister of Transport when it was proposed to commence the construction of a bridge over the Wakefield, Knottingley and Goole Railway on the road between Rawcliffe and Rickard Gyme in the district of Goole, West Riding of Yorkshire.

Mr. Burgin: I approved in June last a proposal by the West Riding County Council to construct a bridge over the railway to eliminate the existing level crossing on the Nottingham—Goole Road at Rawcliffe. I understand that the design for the bridge will be considered by the Fine Art Commission next week and that detailed plans will be ready in about three months time.

### Boarers Manorway Crossing

Mrs. Adamson (Dartford—Lab.), on February 8, asked the Minister of Transport, whether he was aware that a number of persons had been killed from time to time on a level crossing on the Southern Railway between Abbey Wood and Belvedere stations, there being no signal box or responsible official on duty, the gates not being kept locked and there being no light at the crossing; how many persons had been killed in the last two years; and what steps it was proposed to take to remedy the matter.

Mr. Burgin: I understand that the hon. Member refers to the accommodation crossing known as Boarers Manorway. There have been two fatal accidents at this crossing during the past two years. As the road is private, I have no powers in the matter but I am communicating with the railway company, and the local authority, and will let the hon. Member know the result.

### Railway and Canal Commission

Mr. J. Westwood (Stirling and Falkirk—Lab.), on February 8, asked the Minister of Transport, what were the functions of the Railway and Canal Commission, and in particular did they include the maintenance or development of canal traffic, with special reference to the Forth & Clyde Canal?

Mr. Burgin: The functions of the Railway and Canal Commission are so numerous and varied that I should hesitate to attempt a detailed description within the limits of an answer to a Parliamentary question. The hon. Member will however find information on the subject in the Civil Judicial Statistics presented annually to Parliament by the Lord Chancellor. If he has in mind any special point relating to the Forth & Clyde Canal and will communicate with me I will endeavour to assist him.

Mr. Westwood: Is the Minister aware that the Forth & Clyde Canal is owned by the railway company who are desperately anxious for a square deal for themselves but absolutely refuse a square deal to canal traffic in the interests of the general community?

There was no reply.

### Fencing of Electric Railway Tracks

Lord Kilmaine in the House of Lords on February 14 moved "That in the case of an electric railway where the current was on the ground and not overhead, the company be required to fence in their track on both sides throughout, so as to make it impossible for children or dogs or other domestic animals to stray on to the line and come in contact with the live rail." He said that the Southern Railway line between Hastings, Eastbourne, Brighton, Lewes and Victoria was in places so poorly fenced that any child could climb over and get on to the line, and almost any dog could get under the fence. Several foxhounds had been hurt by coming in contact with live rails, and many farmers were anxious about their livestock. The Southern Railway by electrification saved a great deal of expense to the directors and shareholders, and they ought to be advised to fence in their line in such a way as to make it safe for the public.

The Earl of Radnor said that the Southern Railway had something like 680 miles of electrified lines out of a total in this country of 900 miles, and all on the Southern Railway was third rail electrification. The actual amount of damage that had been done through electrocution of hounds was not very large. So far as children and grown-ups were concerned, in the year 1938 the total number killed by electrocution accidently in electrified areas was six. There were many other activities in the transport world which were far more dangerous than that. Accidental deaths from electrocution of the public in the last nine years totalled only 43—40 children and 3 adults. He had not included the suicides, which were numerous. It was impossible for the Railway Company to put up a fence which it was impossible for children to scale some way or other. Every possible precaution was taken at such points as stations, level crossings, accommodation crossings and the like to prevent accidents, and the effect was that on the whole the mortality was not great. The third rail system had been approved by Parliament. If the line was fenced on both sides throughout its length with an unclimbable and imperishable fence of a type now used in increasing amounts at danger spots, it would cost the railway company somewhere between £300,000 and £350,000, which was a considerable sum in these days for railway companies, and would produce no increase in the income of the railway company. He very much doubted whether it would do much to decrease the very small mortality. The agitation about the dangers of the third rail was based much more upon fear than upon reality.

The Earl of Erne said that during last year the Southern Railway Company put up over 50 miles of the improved type of fencing, which covered all places where trespassing had been reported as prevalent or likely to occur. Up to the end of January, 1939, the company had erected 63 miles of special fencing. In view of the action taken by the Southern Railway Company and the fact that, in actual practice, the inspecting officers had found the railway companies willing to provide improved fencing where those officers recommended it, the Minister of Transport did not feel justified at present in asking Parliament to impose on the companies a statutory obligation to put up this fencing throughout the whole of their electrified lines. The Minister was fully alive to the importance of the question and would continue to give it his constant and careful attention.

Lord Kilmaine said he was quite satisfied with the Earl of Erne's statement that the Government had the matter in hand and would take the necessary steps. He therefore asked leave to withdraw the motion.

Leave was given and the motion was withdrawn.

## Parliamentary Notes

### Southern Railway Bill

The Southern Railway Bill was read a second time on February 9 and referred to the Examiners of Petitions for Private Bills.

### L.N.E.R. Bill

The London & North Eastern Railway (Superannuation Fund) Bill was read a second time on February 13 and referred to the Examiners of Petitions for Private Bills.

## Criteria of an Efficient Railway Service

On February 9 the first and second prize-winners in the prize essay competition of the G.W.R. (London) Lecture and Debating Society—Mr. C. J. Coleman, Carriage & Wagon Manager's Office, Swindon, and Mr. N. J. Cooper, District Goods Manager's Office, Shrewsbury, respectively—initiated a discussion on the essay subject. Mr. H. Wheeler, Assistant to the General Manager, presided.

Mr. Coleman said that it did not follow that high dividends were proof of great efficiency. The question to be asked was—what did the passenger expect on a journey? In the first place he expected easy accessibility to information. Then having once started his journey, he expected adequate accommodation and punctuality. In regard to the first requirement, his expectation was too often disappointed. The passenger expected trains and stations to be clean and free from litter, difficult as this was by reason of the habits of some members of the travelling public themselves. Lighting and heating should of course be adequate, and the passenger might well not be at all satisfied with some stations. Refreshment facilities were an important factor in giving the passenger a satisfactory journey, and he was entitled to expect the possibility of having food and drink on any journey lasting more than, say, two hours.

The trader expected prompt delivery and absence of damage. The approximation to these two simple indices involved a great number of subordinate ones; the elimination of unnecessary unloading and re-loading, fragile packing, mishandling, shunting, and so on.

There were also criteria domestic to the railway service. The first of these was a contented staff, which implied the absence of labour disputes. Others, only slightly less important, were minimisation of waste, the incidence of accidents, and economy of operations in relation to the given job of work.

Mr. Cooper's view was that the criteria were to be sought in the provision of speed and safety in transport; in satisfaction to the customers; and in an adequate return on capital. If the first criterion was to be reached, it was in regard to the branch services that the greatest effort was necessary, and on the freight side, to ensure the rapid transit of small consignments as distinct from through loads between centres. The criterion of safety needed no discussion so far as passengers were concerned, but it was a different matter for goods. It was necessary to realise that the public was apprehensive of the handling and shunting of goods. The third criterion, satisfaction of customers, presented the difficulty that passengers and traders did not, more often than not, express their requirements to the railway and it was essential that this should be overcome by advertising, a more direct approach to the public, increased civility, and so on. Discussion on the final criterion—does it pay?—could be summed up in the phrase—get more traffic.

Subsequent discussion centred round questions of statistical indices, the education of the staff towards efficiency, comfort of travelling, frequency as opposed to speed of services, and so on.

## G.W.R. Ambulance Presentation at Shrewsbury

Ambulance workers in the Chester Division, G.W.R., assembled for their annual dinner at Shrewsbury on the evening of February 1 to receive awards gained during the winter session. Mr. A. V. R. Brown, Divisional Superintendent, presided over the gathering, at which Mr. F. R. Potter, Superintendent of the Line, was the principal guest and made the presentations. Among the many local officers present were Mr. D. Blee, District Goods Manager, Shrewsbury; Mr. G. Cornish, District Goods Manager, Liverpool; and Mr. R. H. Grey, Divisional Locomotive Superintendent; Drs. A. W. H. Houghton and A. C. Williams of Shrewsbury also attended.

Mr. Brown, in the course of his opening address, referred to the honour conferred on the division by the presence of the Superintendent of the Line; he stressed the voluntary aspect of the first aid movement, and congratulated the workers in the division on their high standard of efficiency. He was particularly gratified that such a large number of the class members had gained the company's long service awards for first aid.

Mr. Potter, in commending the first aid movement, referred to the value of competitions which were being held in the various divisions throughout the Great Western Railway territory, and the practice which was inseparable from those contests. He particularly congratulated the energetic Divisional Secretary, Mr. J. A. Martin, and the various class secretaries, on the fine work they had accomplished. Mr. Potter also presented awards gained in connection with the signalling, salesmanship, station accountancy, goods rates and station working classes.

Other speakers stressed the value to members of the staff of the various educational classes. A pleasing feature of the gathering was a presentation to Mr. A. H. Everett, Signalling Instructor, in recognition of his valued services.

## L.M.S.R. London District Goods Manager's Smoking Concert

Mr. A. L. Castleman, London District Goods Manager, L.M.S.R., occupied the chair at the L.M.S.R. London District Goods Manager's annual smoking concert which was held at the Queen's Hall on Monday, February 13.

He was supported by Mr. G. W. Galloway (Assistant District Goods Manager); Mr. W. O. Davies (Commercial Assistant); Mr. E. Overend (Operating Assistant); Mr. M. Hewitt (Cartage Assistant); Mr. W. Eastland (Staff Assistant). Officers of the company present included Messrs. C. W. Fairburn, H. V. Mosley, G. Morton, W. A. Stanier, T. W. Royle, A. F. Bound, J. Shearman, D. C. McCulloch. Also present were Messrs. H. J. Hoskins (Great Western Railway); A. Gregory, P. Syder, and H. M. Collings (L.N.E.R.); E. E. Young (Southern Railway); F. Tipton and J. R. Smith (Thames Steam Tug & Lighterage Co.); F. Edmeades and R. H. Lambert (Union Lighterage Co.); and representatives of many of the important trading concerns in London.

There were no speeches, but a fifteen minutes' interval in the musical programme gave those present the opportunity of circulating and greeting their friends. The artists included: Helen Hill, soprano; Gladys Knight; contralto; Tom Williams, baritone; Mario de Pietro, banjo and mandoline; Harry Hemsley; Cecil Johnson; Leslie Watson; Emile Philippe, accompanist; and Percy Tapp, organist.

## S.R. Eastern Divisional Engineer's Staff Dinner

On February 8 the fifth annual dinner of the Eastern Divisional Engineer, Southern Railway, and his staff was held at the County Hotel, Ashford, Kent, when representatives attended from nearly all departments.

Mr. A. E. Brounger, proposing the health of the Chairman, Mr. H. E. Robarts, spoke of the extra work which had been incurred on the division during the past year through electrification, and other causes, the main burden of which had fallen on the Divisional Engineer.

Mr. H. E. Robarts, in responding, said he always valued the opportunity of thanking members of the staff for all the work they had done and assured them he appreciated the efforts of every member of the indoor and outdoor staff.

Mr. S. W. G. Denness proposed the toast of "The Visitors," and remarked that they were always glad of the occasion for seeing old friends; their visitors came not only in a friendly capacity but as representatives of the other departments to which they belonged.

Mr. J. L. Harrington responded for the visitors in a very witty speech and expressed their thanks for the cordial reception given them and the happy evening.

XUM

# NOTES AND NEWS

**Institution of Locomotive Engineers.**—The twenty-first annual dinner of the institution will be held on Friday, March 31, at the Trocadero Restaurant, Shaftesbury Avenue, London, W.1.

**Fatal Derailment in South Africa.**—A passenger train was derailed on February 13 at Daljosephat station on the Cape Town—Port Elizabeth line, some 50 miles from the former city. Five persons are reported to have been killed.

**Civil Engineers' Summer Meeting.**—The summer meeting of the Institution of Civil Engineers will be held at Birmingham, from Thursday, July 6, to Saturday, July 8. Papers will be read on "Town-Planning, with Special Reference to Birmingham," by Mr. H. J. Manzoni, M.Inst.C.E., and on "Sewerage and Sewage Disposal," by Mr. John D. Watson, M.Inst.C.E., and various visits will be made, including one to the Elan Valley Waterworks.

**Nicaraguan Railway Accident.**—What is described in a Reuters message as the worst railway accident in the history of Nicaragua occurred last Sunday night, when a passenger train from Sauce collided with a shunting engine at Leon station, involving the loss of 12 lives. The passengers were sightseers returning from a new extension of the railway between Sauce and Esteli, where President Somoza had laid the first rail during the afternoon. The presidential train passed Leon station only half an hour before the accident.

**Eire Transport Enquiry Begun.**—On January 27, Mr. W. H. Morton, General Manager of the Great Southern Railways, appeared before the Transport Commission and gave evidence on behalf of the Great Southern Railways, having submitted a mass of detailed particulars regarding the working of the railway and its ancillary services. It is understood that this will be a private enquiry, and from the number of county councils, associations, and private individuals who intend giving evidence it does not seem likely that the report of the commission will be submitted for a considerable time.

**More G.W.R. Irish Sailings.**—From Monday, March 6, the Great Western Railway will introduce an augmented and revised service to and from Ireland *via* Fishguard and Waterford. From that date and until further notice, there will be three sailings, instead of two as at present, in each direction, as follow: From Fishguard, Mondays, Wednesdays, and Fridays, in connection with the 5.55 p.m. train from Paddington and connecting services; from Waterford, Tuesdays, Thursdays, and Saturdays at 7.0 p.m. (instead of 5.25 p.m.), connecting with the 3.55 a.m. train from Fishguard Harbour as at present. Train connections with all services will be made from and to principal towns in England and Wales, *via* Fishguard and from and to principal centres in Ireland, *via* Waterford.

**Collision Near Barcelona.**—According to messages from Barcelona, 53 persons were killed and nearly one hundred injured on February 11, when a crowded workmen's train running downhill from Tarrasa towards Barcelona collided with a stationary wagon near the Sarriá tunnel and afterwards ran into the back of another train near San Gervasio. The second train, comprising three coaches, had left Tarrasa 20 minutes earlier and most of the victims were in the middle coach.

**Federated Malay States Railways' Revenue in 1938.**—The total revenue for the year 1938 was £1,710,387 (subject to adjustment) compared with £1,966,574 for the year 1937. The outstanding feature in the trade during 1937 was the record tonnage of tin and rubber handled, whereas during 1938 there was a considerable fall in trade, chiefly due to the international control of Malaya's two major industries. It is, however, considered gratifying that the decrease in railway revenue is not greater than 13 per cent. on the 1937 figures.

**German Train Service Reductions.**—During the past year the German State Railway introduced a considerable number of additional services which at the time were stated to be experimental. Many of these services are being perpetuated, but others have recently been suspended until further notice. The latter include one FD day service in each direction between Berlin and Vienna *via* Passau, one D train each way between Berlin and Hamburg, one between Cologne and Dresden, one between Dortmund and Munich *via* Stuttgart, one between Frankfort and Munich *via* Würzburg, one between Berlin and Basle *via* Frankfort, one between Berlin and Stuttgart, and two between Salzburg and Innsbruck. In addition, a number of relief services running at week-ends or for limited periods have been suspended.

**Indian Railway Finances.**—The revised Indian Railway estimates for the year 1938-39 and the estimated budget for 1939-40 show a surplus of a little over £1,500,000 for both years. Traffic receipts for 1938-39 are expected to amount to about £71,000,000, or some £250,000 less than the previous year. At the same time working expenses are expected to be about £500,000 higher. The estimates provide about £9,500,000 for depreciation and £22,000,000 for interest, and the budget for the year 1939-40 provides for slightly increased receipts with an increase of £500,000 in ordinary working expenses. The surplus for 1938-39 and 1939-40 will be paid to central revenues. The depreciation fund balance at the end of 1938-39 will be about £18,000,000 and will be increased to about £23,000,000 at the end of 1939-40. The capital programme for the year 1939-40 provides for an expenditure of £8,250,000, including £500,000 for three new lines in Sind and the balance for the improvement of open line facilities. Expenditure on rolling stock, according to a Reuters message, is estimated at £3,750,000.

**L.M.S.R. London Ambulance Competition.**—St. Albans "A" team won the final of the L.M.S.R. London District Ambulance Competition, held in London on February 14; the Camden Goods "A" team was placed second, and Watford "A" third. Mr. G. L. Darbyshire, Chief Officer for Labour and Establishment, presided at the presentation of prizes to the winners by Councillor John Sperni, Deputy-Mayor of St. Pancras, whilst a vote of thanks to the judges (Captain A. C. White-Knox and Dr. W. Megaw) was proposed by Mr. G. Morton, Chief Accountant.

**Brick Traffic Exceptional Rate.**—The consent of the Railway Rates Tribunal to an exceptional rate for the transport by the London & North Eastern Railway of bricks from Fletton in Northamptonshire to Halifax in Yorkshire in order to meet road competition was announced in a judgment given on February 14. The company had asked for an exceptional rate of 8s. 6d. a ton, 42 per cent. below the standard charge of 14s. 8d. per ton, in respect of 15,000 tons of bricks which the London Brick Company wanted to transport to a building site at Halifax. The application was opposed by the Northern Brick Federation.

**Presentation to Mr. Ashton Davies.**—At a very representative meeting of the superintendents and goods managers of the railway companies, held at the Railway Clearing House on February 15, opportunity was taken to present to Mr. Ashton Davies a cabinet, and to Mrs. Ashton Davies a coffee set, to mark the occasion of his appointment as Vice-President of the L.M.S.R. Mr. F. Potter, Great Western Railway, in making the presentation, explained that Mr. Ashton Davies's new appointment necessitated his severance from the Railway Clearing House conferences which he had attended for so many years, and it had been the unanimous desire of his former colleagues that he should not be allowed to leave them without taking with him some token of the regard and esteem in which he was held by them all. Reference was also made to Mr. Ashton Davies's recovery from his recent illness, and all the members of the conferences joined in wishing him good health and every happiness in the future. Mr. Ashton Davies thanked the members of the conferences for their gifts, which he said would always form a tangible reminder of his long and pleasant associations with them, and for the kind words with which they were accompanied.

## Forthcoming Events

Feb. 18 (*Sat.*).—Stephenson Locomotive Society (Newcastle), at Y.M.C.A., Blackett Street, 6.30 p.m. Railway Ciné Display, by Mr. W. Greenfield.

Feb. 20 (*Mon.*).—Engineers' German Circle, at Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. "Erdbautechnische Sondermassnahmen beim bau der Reichsautobahnen (Special Measures of Earthwork Technique in the Construction of the German State Motor Roads)," by Herr Professor Dr.-Ing. Leo Casagrande.

Engineers' Guild, at Caxton Hall, Caxton Street, London, S.W.1, 6.30 p.m. General Meeting. Non-Members invited.

G.W.R. (Birmingham) Lecture and Debating Society, at Great Western Hotel, Snow Hill Station, 6.30 p.m. "Sports and Humour," by Mr. H. Wood.

Institute of Transport (Scottish), at St. Enoch Hotel, Glasgow, 7.15 p.m. "High Speed on the Railway," by Mr. J. Blackstock. "Statistics for Public Service Vehicle Operation," by Mr. J. Tulloch.

Railway Students' Association (London), at London School of Economics, Houghton Street, W.C.2, 6 p.m. "Modern Legislation of Road Motor Transport," by Mr. F. Bristow

Feb. 21 (*Tues.*).—Institute of Transport (Leeds Graduate), at City Transport Department, 7 p.m. "Goods Traffic by Rail," by Mr. W. Blakey.

Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "The Operation and Control of a Road Haulage Undertaking," by Mr. J. Nicholl.

Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. "The Storstrøm Bridge, Denmark," by Messrs. G. Maunsell and J. Pain.

Institution of Locomotive Engineers (Manchester), at Literary and Philosophical Society, 36, George Street, 7 p.m. "Heat Treatment of Metals in Connection with Carriage and Wagon Building," by Mr. A. Page.

Permanent Way Institution (Scottish), at Royal Technical College, George Street, Glasgow, 7.15 p.m. "Railway Speeds of the Future," by Mr. R. Peters.

Feb. 22 (*Wed.*).—Institution of Civil Engineers (Edinburgh), at Royal Scottish Society of Arts, 16, Royal Terrace, 6.15 p.m. "Railway Work in North China," by Mr. W. Leitch.

Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. Presidential Address by Mr. W. A. Stanier.

Institution of Railway Signal Engineers, at Inst. of Electrical Engineers, Savoy Place, London, W.C.2, 6 p.m. Presidential Address and Annual General Meeting.

Feb. 23 (*Thurs.*).—Institution of Electrical Engineers (London), Savoy Place, W.C.2, 6 p.m. "The Metadyne and its Application to Electric Traction," by Messrs. G. Fletcher and A. Tustin.

Feb. 24 (*Fri.*).—Institute of Transport (Manchester-Liverpool), at Queen's Hotel, Manchester, 6.30 p.m. "Travel Amenities," by Sir Harold Hartley, C.B.E.

## British and Irish Traffic Returns

| GREAT BRITAIN | Totals for 6th Week | | | Totals to Date | | |
|---|---|---|---|---|---|---|
| | 1939 | 1938 | Inc. or Dec. | 1939 | 1938 | Inc. or Dec. |
| | £ | £ | £ | £ | £ | £ |
| L.M.S.R. (6,831¼ mls.) | | | | | | |
| Passenger-train traffic... | 380,000 | 390,000 | – 10,000 | 2,233,000 | 2,299,000 | – 66,000 |
| Merchandise, &c. ... | 445,000 | 494,000 | – 49,000 | 2,455,000 | 2,867,000 | – 412,000 |
| Coal and coke ... | 314,000 | 309,000 | + 5,000 | 1,852,000 | 1,879,000 | – 27,000 |
| Goods-train traffic ... | 759,000 | 803,000 | – 44,000 | 4,307,000 | 4,746,000 | – 439,000 |
| Total receipts ... ... | 1,139,000 | 1,193,000 | – 54,000 | 6,540,000 | 7,045,000 | – 505,000 |
| L.N.E.R. (6,315 mls.) | | | | | | |
| Passenger-train traffic... | 256,000 | 255,000 | + 1,000 | 1,494,000 | 1,540,000 | – 46,000 |
| Merchandise, &c. ... | 299,000 | 351,000 | – 52,000 | 1,674,000 | 1,997,000 | – 323,000 |
| Coal and coke ... | 272,000 | 282,000 | – 10,000 | 1,588,000 | 1,698,000 | – 110,000 |
| Goods-train traffic ... | 571,000 | 633,000 | – 62,000 | 3,262,000 | 3,695,000 | – 433,000 |
| Total receipts ... ... | 827,000 | 888,000 | – 61,000 | 4,756,000 | 5,235,000 | – 479,000 |
| G.W.R. (3,737¾ mls.) | | | | | | |
| Passenger-train traffic... | 156,000 | 160,000 | – 4,000 | 960,000 | 972,000 | – 12,000 |
| Merchandise, &c. ... | 187,000 | 196,000 | – 9,000 | 1,050,000 | 1,175,000 | – 125,000 |
| Coal and coke ... | 118,000 | 123,000 | – 5,000 | 696,000 | 780,000 | – 84,000 |
| Goods-train traffic ... | 305,000 | 319,000 | – 14,000 | 1,746,000 | 1,955,000 | – 209,000 |
| Total receipts ... ... | 461,000 | 479,000 | – 18,000 | 2,706,000 | 2,927,000 | – 221,000 |
| S.R. (2,140 mls.) | | | | | | |
| Passenger-train traffic... | 259,000 | 257,000 | + 2,000 | 1,547,000 | 1,560,000 | – 13,000 |
| Merchandise, &c. ... | 55,000 | 61,000 | – 6,000 | 315,500 | 349,000 | – 33,500 |
| Coal and coke ... | 39,000 | 38,000 | + 1,000 | 224,500 | 229,000 | – 4,500 |
| Goods-train traffic ... | 94,000 | 99,000 | – 5,000 | 540,000 | 578,000 | – 38,000 |
| Total receipts ... ... | 353,000 | 356,000 | – 3,000 | 2,087,000 | 2,138,000 | – 51,000 |
| Liverpool Overhead ... (6½ mls.) | 1,368 | 1,308 | + 60 | 8,304 | 8,278 | + 26 |
| Mersey (4½ mls.) ... | 4,306 | 4,169 | + 137 | 27,123 | 26,706 | + 417 |
| *London Passenger Transport Board ... | 563,000 | 553,300 | + 9,700 | 18,711,300 | 18,530,500 | + 180,800 |
| IRELAND. | | | | | | |
| Belfast & C.D. pass. (80 mls.) | 1,600 | 1,599 | + 1 | 10,157 | 10,032 | + 125 |
| ,, ,, goods | 467 | 454 | + 13 | 2,411 | 2,440 | – 29 |
| ,, ,, total | 2,067 | 2,053 | + 14 | 12,568 | 12,472 | + 96 |
| Great Northern pass. (543 mls.) | 7,550 | 8,000 | – 450 | 47,150 | 48,100 | – 950 |
| ,, ,, goods | 9,750 | 8,450 | + 1,300 | 53,500 | 48,800 | + 4,700 |
| ,, ,, total | 17,300 | 16,450 | + 850 | 100,650 | 96,900 | + 3,750 |
| Great Southern pass. (2,076 mls.) | 27,762 | 27,736 | + 26 | 164,802 | 166,439 | – 1,637 |
| ,, ,, goods | 40,112 | 40,738 | – 626 | 238,084 | 253,760 | – 15,676 |
| ,, ,, total | 67,874 | 68,474 | – 600 | 402,886 | 420,199 | – 17,313 |

* 33rd Week (before pooling)

## British and Irish Railway Stocks and Shares

| Stocks | Highest 1938 | Lowest 1938 | Prices Feb. 15, 1939 | Prices Rise/Fall |
|---|---|---|---|---|
| G.W.R. | | | | |
| Cons. Ord. ... | 65¼ | 25¾ | 24½ | –3 |
| 5% Con. Prefce.... | 118¾ | 74 | 74½ | –4 |
| 5% Red. Pref. (1950) | 111¾ | 90 | 84½ | –3 |
| 4% Deb. ... ... | 111 | 97½ | 98½ | — |
| 4¼% Deb.... ... | 112 5/16 | 100½ | 101 | +1 |
| 4½% Deb.... ... | 118½ | 104 | 106 | — |
| 5% Deb. ... ... | 131½ | 119 | 115½ | — |
| 2½% Deb.... ... | 69¾ | 60 | 63½ | — |
| 5% Rt. Charge ... | 129 | 114 | 108 | –2½ |
| 5% Cons. Guar. ... | 128½ | 103 | 102 | –3½ |
| L.M.S.R. | | | | |
| Ord. ... ... | 30½ | 11 | 11½ | –¾ |
| 4% Prefce. (1923) | 70¼ | 23 | 24½ | –2 |
| 4% Prefce. ... | 82¼ | 43¾ | 46½ | –2 |
| 5% Red. Pref. (1955) | 103½ | 66 | 66½ | –1 |
| 4% Deb. ... ... | 105 13/16 | 85 | 91½ | — |
| 5% Red. Deb. (1952) | 114¼ | 105 | 106 | — |
| 4% Guar. ... | 102¾ | 77½ | 77½ | –1 |
| L.N.E.R. | | | | |
| 5% Pref. Ord. ... | 8 9/16 | 3½ | 3¾ | –¼ |
| Def. Ord. ... ... | 4 7/16 | 2 11/16 | 2½ | –¼ |
| 4% First Prefce. | 68¼ | 21 | 22½ | –2 |
| 4% Second Prefce. | 27¼ | 8 | 9 | — |
| 5% Red. Pref. (1955) | 97 | 40¼ | 42½ | — |
| 4% First Guar. ... | 97½ | 66¼ | 63½ | –1 |
| 4% Second Guar. | 91¼ | 52 | 49½ | –2 |
| 3% Deb. ... ... | 79¼ | 60 | 65½ | — |
| 4% Deb. ... ... | 104⅛ | 77 | 85½ | — |
| 5% Red. Deb. (1947) | 110 5/8 | 97 | 105½ | — |
| 4½% Sinking Fund Red. Deb. | 108 11/16 | 101 | 102 | — |
| SOUTHERN | | | | |
| Pref. Ord. ... | 87 | 47⅞ | 61½ | –2 |
| Def. Ord. ... | 21¾ | 9¼ | 11½ | –1 |
| 5% Pref. ... ... | 115 | 83 | 89½ | +1 |
| 5% Red. Pref. (1964) | 115½ | 98 | 96½ | — |
| 5% Guar. Prefce. | 128½ | 106 | 107½ | +1 |
| 5% Red. Guar. Pref. (1957) | 116 | 109½ | 107½ | — |
| 4% Deb. ... ... | 109¼ | 95 | 97½ | — |
| 5% Deb. ... ... | 129 | 117 | 113½ | +1 |
| 4% Red. Deb. 1962–67 | 107 | 101½ | 100 | +1 |
| BELFAST & C.D. | | | | |
| Ord. ... ... | 4 | 3½ | 4 | — |
| FORTH BRIDGE | | | | |
| 4% Deb. ... ... | 102 | 99⅛ | 96½ | — |
| 4% Guar. ... | 103¼ | 94½ | 95 | — |
| G. NORTHERN (IRELAND) | | | | |
| Ord. ... ... | 5½ | 2½ | 3 | –¼ |
| G. SOUTHERN (IRELAND) | | | | |
| Ord. ... ... | 25½ | 8½ | 10 | –5 |
| Prefce. ... ... | 35 | 13 | 12 | +2 |
| Guar. ... ... | 70¼ | 30 13/32 | 29 | — |
| Deb. ... ... | 83 | 56 | 48 | — |
| L.P.T.B. | | | | |
| 4½% "A" ... | 119⅝ | 107½ | 111½ | +2 |
| 5% "A" ... | 130 | 117 | 119½ | +2 |
| 4½% "T.F.A." ... | 108 | 98 | 103 | — |
| 5% "B" ... | 122 13/16 | 105 | 111⅛ | — |
| "C" ... ... | 84 | 68 | 69½ | — |
| MERSEY | | | | |
| Ord. ... ... | 24¼ | 16½ | 21* | — |
| 4% Perp. Deb. ... | 102⅞ | 94¾ | 94½ | — |
| 3% Perp. Deb. ... | 77 | 69 | 66½ | — |
| 3% Perp. Prefce. | 66½ | 57 | 55* | — |

* ex dividend

XUM

# CONTRACTS AND TENDERS

D. Wickham & Co. Ltd. has received a repeat order from the Central Uruguay Railway of Monte Video for three petrol-driven gang trolleys and three trailers.

### Breakdown Crane for Iraq

Ransomes & Rapier Limited has received an order from the Crown Agents for the Colonies for one 75-ton, steam-operated, self-propelling breakdown crane, fitted with Stokes patent relieving bogies and complete with match truck, for service on the Iraq State Railways.

Dorman, Long & Co. Ltd. has received orders from the Indian Stores Department for mild steel sheets at a total price of Rs. 37,028, delivered free Calcutta.

The Associated Equipment Co. Ltd. has received orders from the London Passenger Transport Board for seven petrol-engined Matador goods vehicles, four being tower wagons and three gulley emptiers; and from Northern General Transport Co. Ltd. for six Regal passenger vehicles.

### Cross-Channel Vessel for S.R.

William Denny & Brothers has received an order from the Southern Railway for a cross-Channel vessel to run on the Dover-Calais and Folkestone-Boulogne services. The vessel will be an improvement on the *Canterbury*, which till now has conducted the "Golden Arrow" service to the Continent. The vessel will be driven by turbines.

The Crown Agents for the Colonies have recently placed the following orders :—

Brush Electrical Co. Ltd.: Static transformers.
Steel Scaffolding Co. Ltd.: Steel tubular scaffolding.
Newport & South Wales Tube Co. Ltd.: Steel water pipes.
Dorman, Long & Co. Ltd.: Steelwork.
Horseley Bridge & Thomas Piggott Limited: Steelwork.
O. T. Lempriere & Co. Pty. Ltd.: Tin ingots.
Chloride Electrical Storage Co. Ltd.: Train-lighting cells.
Wota Limited: Wota brake slack adjusters.
Rivet, Bolt & Nut Co. Ltd.: Bolts and nuts.
Turners Asbestos Cement Company: Asbestos cement corrugated sheets.
Westinghouse Brake & Signal Co. Ltd.: Brake spares, ground frames.
Enfield Cable Works Limited: Cable.
W. T. Henley's Telegraph Works Co. Ltd.: Cable.
Davey Paxman & Co. (Colchester) Ltd.: Centrifugal pump.
Staveley Coal & Iron Co. Ltd.: Cast iron pipes.
Whitecross Co. Ltd.: Copper wire.
John Watts (Burnley) Limited: Cotton waste.
R. A. Lister & Co. Ltd.: Diesel engine cylinder.
Wm. Bain & Co. Ltd.: Galvanised point rodding.
Macnab & Co. Ltd.: Jolt ram squeezing, mechanical pattern drawing moulding machines.
R. Hudson Limited: Light railway track.
Steel, Peech & Tozer branch of the United Steel Cos. Ltd.: Locomotive tyres.
Chloride Electrical Storage Co. Ltd.: Lux cells.
Whitehead Iron & Steel Co. Ltd.: Mild steel bars.
P. & W. Maclellan Limited: Mild steel plates.
Guest, Keen & Nettlefolds Limited: Mild steel rivets.

Ateliers de la Dyle has received an order from the Morvi Railway for three metre-gauge 60-ft. bogie carriage underframes, to be supplied to the inspection of Messrs. Robert White & Partners.

Beruck & Comens (Engineers) Limited has received orders from the Indian Stores Department for 17 sets of crossings and 126 sets of switches at a total price of Rs.75,074, delivered free Halishahar.

Craven's Railway Carriage & Wagon Co. Ltd. has received an order from the Bengal-Nagpur Railway Administration for 136 pairs of rolled steel disc wheels and axles for wagons.

The Superheater Co. Ltd. has received an order from the Bombay, Baroda & Central India Railway Administration, to the inspection of Messrs. Rendel, Palmer & Tritton, for the supply of nine sets of superheater elements.

The Superheater Co. Ltd. has also received an order from the Morvi Railway Administration for one engine set comprising 18 superheater elements, to be supplied to the inspection of Messrs. Robert White & Partners.

Schweizerische Wagons & Aufzügefabrik A.G. has received orders from the Swiss Federal Railways for four bogie lightweight combined luggage and mail vans for service on the Geneva–Zurich and Lausanne–Basle limited high-speed electric trains. An order for a further 20 lightweight coaches for internal services is also being placed by the Swiss Federal Railways.

The G.W.R. is to carry out the following new works and reconstructions :—

*Bridge Reconstruction.*—The viaduct carrying the South Wales main line over the river near Kidwelly is to be reconstructed. At Swansea East Dock the flooring is to be renewed of the drawbridge carrying the Vale of Neath line over the river. A portion of the bridge carrying the Bristol & South Wales line over a public road near Pilning is to be reconstructed. At Brimscombe Bridge Halt, by arrangement with the Gloucestershire County Council, the overbridge is to be strengthened and widened to 31 ft. between parapets, at the same time as it is reconstructed.

*Warehouse Accommodation.*—A new warehouse is being provided at Bewdley and the existing warehouse at Usk is to be extended to meet increasing storage requirements.

*Signalling at Bransford Road.*—In connection with renewal work now necessary at Bransford Road, between Worcester and Malvern, signalling alterations are being effected to admit of the abolition of Bransford Road station signal box. In addition, the work will assist traffic operations.

*Improved Working Facilities.*—An additional crossover is being provided in Exeter (St. David's) goods yard. While relaying work is being carried out at Hemerdon, opportunity is being taken to extend the down running loop. A siding at Yeovil (Pen Mill) is to be extended to accommodate an additional 23 wagons. Additional mileage siding accommodation is being provided at Lechlade, where the requirements have increased considerably during recent years.

*New Halt.*—A halt is being constructed at Bryncelynog, between Llafar Halt and Cwm Prysor.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Engineering Section), receivable by March 8, for the supply on a running contract basis of 89,340 ft. of canvas hoses required for the Indian State Railways during the period June 16, 1939, to June 15, 1940.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Engineering Section), receivable by March 8, for the supply of 31,300 ft. of 3-in., 12,000 ft. of 3½-in., and 53,300 ft. of 4-in. train-lighting belting and a total of 2,060 sets of belt fasteners, required for the Indian State Railways.

### Diesel-Electric Locomotives Required

Tenders are invited by the Superintendent of Stores, Royal State Railways of Siam, Bangkok, receivable by June 1, for the supply of diesel-electric locomotives. Blank tender forms are obtainable from Messrs. Sandberg, 40, Grosvenor Gardens, London, S.W.1 and 25, Broadway, New York City, at the price of £5 and U.S. $22·00, respectively.

### Signal Materials Required for South Africa

The South African Railways and Harbours Administration, Stores Department, is calling for tenders (Tender No. 2067) for the supply and delivery of quantities of electrical signal material including interlocking lever frame, colour light signals, signal posts, point detectors, circuit controllers, track relays, and repeating indicators. Tenders endorsed "Tender No. 2067 for electrical signal material," and addressed to the Secretary to the Tender Board, Room 420, S.A.R. & H. Headquarter Offices, Johannesburg, must be received by March 13.

### Battery Locomotives Required for South Africa

The South African Railways and Harbours Administration is calling for tenders (Tender No. 2097) for the supply and delivery of four battery-operated electric locomotives of 2 ft. gauge required for haulage of cocopans. Tenders endorsed "Tender No. 2097 Battery locomotives" and addressed to the Chief Stores Superintendent, Purchase Section, Railway Headquarters, Johannesburg, must be received by March 27.

### American Railway Equipment

Class 1 railroads in the United States placed 18,517 new freight cars in service in 1938, according to the Association of American Railroads, says Reuters Trade Service from New York. This is a decrease of 56,541 compared with 1937, and 25,424 compared with 1936. New cars included 5,195 for coal, 10,530 box cars, plain and for motorcars, 43 refrigerator cars, 1,529 flat cars, 496 stock cars, and 724 miscellaneous types. Class 1 roads also placed 164 new steam locomotives in service in 1938, compared with 373 in 1937 and 87 in 1936, and 118 new electric and diesel locomotives compared with 77 in 1937 and 34 in 1936.

# OFFICIAL NOTICES

## London and North Eastern Railway Company

NOTICE IS HEREBY GIVEN that the Sixteenth Ordinary General Meeting of the Proprietors of the London & North Eastern Railway Company will be held in the Wharncliffe Rooms, Hotel Great Central, Marylebone, London, N.W.1, on Friday, the 3rd day of March, 1939, at 2.0 p.m., for the purpose of the general business of the Company.

NOTICE IS HEREBY FURTHER GIVEN that in accordance with the Standing Orders of Parliament a Special or Extraordinary Meeting of the Proprietors of the Company will be held at the same place on the same day at 3.0 p.m. or as soon thereafter as the business of the Ordinary General Meeting is concluded, for the purpose of considering and, if thought fit, of approving the following Bill which has been introduced into Parliament intituled :—

"A Bill to establish a Superannuation Fund for certain of the staff of the London & North Eastern Railway Company; to provide that payments thereout shall not be assignable or chargeable; to provide for winding up the affairs of Thompson McKay & Company Limited; and for other purposes."

and the following Bill promoted by the London Passenger Transport Board which has been introduced into Parliament intituled :—

"A Bill to empower the London Passenger Transport Board to provide certain services of trolley vehicles; to construct new works; to acquire lands; and to raise additional moneys; to extend the time for the compulsory purchase of certain lands and the completion of certain works; to confer further powers on the Board, including powers as to the running of public service vehicles; and for other purposes."

Dated this 15th day of February, 1939.

By Order,
P. J. DOWSETT,
Secretary.

Marylebone Station,
London, N.W.1.

## OFFICIAL ADVERTISEMENTS

**OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to :—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.**

## London Midland & Scottish Railway Company

NOTICE IS HEREBY GIVEN that a SPECIAL GENERAL MEETING of the London Midland & Scottish Railway Company will, in compliance with the Standing Orders of Parliament, be held at Euston Station, London, N.W.1, on Tuesday, the 28th day of February, 1939, at twelve o'clock Noon precisely, for the purpose of considering and, if so determined, of approving the undermentioned Bill, namely :—

BILL PROMOTED BY THE COMPANY.
DEPOSITED IN PARLIAMENT.

London Midland & Scottish Railway Bill.

A Bill to empower the London Midland & Scottish Railway Company to acquire lands; and for other purposes.

STAMP OF SHORTLAND,
Chairman.
OWEN GLYNNE ROBERTS,
Secretary.

Euston Station,
London, N.W.1.
13th February, 1939.

THE MADRAS & SOUTHERN MAHRATTA RAILWAY COMPANY LIMITED invite Tenders for :—

2,400 HELICAL AND 24 VOLUTE SPRINGS.

Specification and Form of Tender can be obtained at the Company's Offices, 123, Victoria Street, Westminster, London, S.W.1.

Fee ONE GUINEA, *which will not be returned.*

Tenders must be submitted not later than 2.00 p.m. on TUESDAY, 7TH MARCH, 1939.

The Directors do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
V. CRASTER,
Secretary.

## Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS.

APPLICATIONS from qualified candidates are invited for the following post :—

TELEGRAPH ENGINEER required by the Sierra Leone Government Railway for two tours each of 12-24 months with possible permanency. Salary £475, rising to £840 a year. Free passages, quarters and liberal leave on full salary. Candidates, aged 25-40, must be Associate Members of the Institution of Electrical Engineers, have received a thorough training in telegraph and telephone engineering, and subsequently have had practical experience with a British or Colonial Railway. A good working knowledge of Rural Automatic telephone exchange is essential and a working knowledge of Wireless Telephony and Broadcast Relay System would be an advantage.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/8294.

## Indian State Railways

APPLICATIONS are invited for an appointment as Assistant Transportation Superintendent (Rolling Stock), Traction Branch, Great Indian Peninsula Railway.

Candidates should be under 35 years of ago and must possess a Science or Engineering degree of a recognised University or equivalent educational qualifications. They must have had good practical, mechanical and electrical engineering workshop training and not less than five years' subsequent practical experience in a responsible post controlling the maintenance and operation of electric multiple unit trains and electric locomotives. A knowledge of general electric traction work is desirable.

Permanent appointment, subject to three years' probation. Pay :—Rupees 350 plus Rs. 150 Overseas Pay a calendar month (equivalent approximately to £450 p.a.), rising to Rs. 500 plus £30 Overseas Pay a calendar month (£810 p.a.). Provident fund and gratuity. First class passage to India and, if confirmed after probation, further passages for purposes of leave. (Overseas Pay and leave passages admissible only to appointee of non-Asiatic domicile.)

Further particulars and forms of application may be obtained, on application by postcard, from the High Commissioner for India, General Department, India House, Aldwych, London, W.C.2. Last date for receipt of applications 6th March, 1939.

## The Institute of Transport Examinations, 1939

MARCH 1 is the closing date for the deposit of forms of entry for the Graduateship and Associate Membership Examinations, to be held in London and at other centres on April 27th, 28th and 29th.

Particulars of the Institute and its examinations, together with previous examination question papers (price 1s. per set, post free), and copies of the Institute Examination Guide for prospective candidates (price 2s. 6d. post free), may be obtained from the undersigned.

A. WINTER GRAY,
Secretary.
15, Savoy Street,
London, W.C.2.

# Railway and Other Reports

**Great Western Railway Company.**—The Secretary writes, February 10 : "The gross receipts from railway and ancillary businesses for the year 1938 were £1,546,820 less and the gross expenditure was £268,038 more than for the year 1937. Miscellaneous net receipts (less charges) decreased by £27,894. The net revenue for the year amounted to £5,043,753, a decrease of £1,842,752. The balance brought forward from the previous year was £151,578, and after appropriating £100,000 from the Contingency Fund, the directors have decided to recommend the payment of a dividend of ½ per cent. for the year 1938 on the consolidated ordinary stock, leaving a balance of £87,085 to be carried forward. The dividend warrants will be posted on the 1st proximo."

**Canadian Pacific Railway Company.**—Following a meeting of the directors, held on February 13, it was announced : While the earnings for the year were sufficient to meet all expenses and fixed charges, including provisions for depreciation and taxes—with a modest surplus—the directors of the company have decided that in view of the serious decline in the net results, as compared with 1937, it was unadvisable to declare any dividend on the preference stock in respect of 1938.

**Birmingham Railway Carriage & Wagon Co. Ltd.**—Profits for the year ended December 31, 1938, amount to £151,964. After charging interest on debenture stock, directors' fees, and interim dividend paid on the preference stock, and including the £27,106 brought forward, there is a balance of £171,712. The directors recommend a dividend at the rate of 5 per cent., together with a bonus of 2½ per cent., on the ordinary stock for the year, the transference to reserve fund of £50,000 (making the fund £400,000), and the writing off for depreciation of buildings, plant, &c., of £15,000, leaving £50,653 to be carried forward. An ordinary dividend of 5 per cent. was paid for 1937.

# Forthcoming Meetings

Feb. 22 (*Wed.*).—**Great Western Railway Company** (Annual General), Paddington Station, at 11.30 a.m.

Feb. 23 (*Thurs.*).—**Southern Railway Company** (Annual General), Southern House, Cannon Street Station, E.C., at 11.30 a.m., followed by Special General (Wharncliffe) meeting, at 12.30 p.m.

Feb. 23 (*Thurs.*).—**Belfast & County Down Railway Company** (Ordinary Annual General), Queen's Quay, Belfast, at 11.30 a.m.

Feb. 23 (*Thurs.*).—**Mersey Railway Company** (Annual), Winchester House, 100, Old Broad Street, E.C., at 12 noon.

Feb. 23 (*Thurs.*).—**Grand Union Canal Company** (Extraordinary), Winchester House, Old Broad Street, E.C., at 11 a.m.

Feb. 24 (*Fri.*)—**London Midland & Scottish Railway Company** (Annual General), Friends' House, Euston Road, N.W.1, at 11.30 a.m.

Feb. 28 (*Tues.*).—**London Midland & Scottish Railway Company** (Special General), Euston Station, N.W.1, at noon.

XUM

# Railway Share Market

There has been very little business passing in the stock and share markets and consequently the general tendency was for lower prices to rule. Nevertheless no heavy selling was reported and the undertone was fairly steady, although the view is current that markets may not show much activity in the more immediate future as there is a widespread disposition to await the Budget. In many quarters the belief appears to be gaining ground that although there may not be any very large rise in taxation, an increase in N.D.C. is not unlikely.

The surrounding trend of markets and a general feeling that it is very difficult to assess the outlook for the main line railways until the annual meetings have been held, influenced sentiment in regard to home railway securities. The Great Western results came as a disappointment following the satisfaction expressed with the Southern and L.M.S.R. figures. The decrease in net revenue of the Great Western was larger than had been generally estimated, due partly to the large fall in ancillary receipts. Nevertheless, the ordinary stock at 24½ has shown a smaller fall in price than might have been expected, bearing in mind that the dividend of ½ per cent. was not fully earned and necessitates a withdrawal from reserve. The past week's traffics receipts of the main line railways disclosed a smaller decline than had been anticipated, and the view is current that the traffic figures may continue to make a less depressing showing This induced a rather steadier trend in most home railway securities on Wednesday and part of the earlier decline in prices was regained. L.M.S.R. 4 per cent. preference was active around 46½ and the 1923 preference was subsequently firmer at 24½, while the ordinary stock transferred around 11½ and the 4 per cent. guaranteed around 77½. Southern deferred changed hands around 11½, and later the preferred was steadier at 61½. L.N.E.R. issues were out of favour in front of the impending dividend statement, and the first guaranteed moved down to 62½ and the second guaranteed to 48½. Where changed, other guaranteed and debenture stocks were lower in sympathy with the general market trend. Great Western prior charges were not affected very much by the fact that they lose their "full" trustee status by the failure to pay a dividend of 3 per cent. on the ordinary stock, as it is generally realised that they still rank in the trustee list of securities. Elsewhere, London Transport "C" was dull at 70½, awaiting the Thomas Tilling meeting where views may be expressed as to the dividend outlook of this stock.

Foreign railway securities were unable to move contrary to prevailing market conditions and various debentures and preference stocks were lowered sharply, more particularly in the case of B.A. Great Southern, Central Argentine and B.A. Western. In comparison the ordinary stocks were fairly steady, but San Paulo fluctuated. American railway shares were lower on balance for the week, as were Canadian Pacific, while the preference stock of the latter railway reacted on the unexpected decision not to make any dividend payment.

## Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

| | Railways | Miles open 1938-39 | Week Ending | Traffics for Week: Total this year | Traffics for Week: Inc. or Dec. compared with 1938 | No. of Weeks | Aggregate Traffics to Date: Totals: This Year | Aggregate Traffics to Date: Totals: Last Year | Aggregate Traffics to Date: Increase or Decrease | Shares or Stock | Prices: Highest 1938 | Prices: Lowest 1938 | Prices: Feb. 15, 1939 | Yield* (See Note) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | £ | £ | | £ | £ | £ | | | | | |
| South & Central America | Antofagasta (Chili) & Bolivia | 834 | 12.2.39 | 11,680 | – 5,560 | 6 | 74,520 | 103,740 | – 29,220 | Ord. Stk. | 1¾ | 7/16 | 7 | Nil |
| | Argentine North Eastern | 753 | 11.2.39 | 8,102 | + 354 | 33 | 321,544 | 309,326 | + 12,218 | ,, | 6½ | 2 | 4½ | Nil |
| | Argentine Transandine | — | — | — | — | — | — | — | — | A. Deb. | 82 | 75 | 72½ | 5/8 |
| | Bolivar | 174 | Jan., 1939 | 3,400 | – 200 | 4 | 3,400 | 3,600 | – 200 | 6 p.c. Deb. | 8 | 7 | 8½ | Nil |
| | Brazil | — | — | — | — | — | — | — | — | Bonds. | 10 | 4 | 5 | 9 1/16 |
| | Buenos Ayres & Pacific | 2,806 | 11.2.39 | 111,663 | + 1,551 | 33 | 2,623,144 | 2,735,053 | – 111,909 | Ord. Stk. | 6½ | 3¼ | 4 | Nil |
| | Buenos Ayres Central | 190 | 28.1.39 | $81,809 | – $6,700 | 31 | $3,390,400 | $3,820,900 | – $430,500 | Mt. Deb. | 15½ | 8 | 14 | Nil |
| | Buenos Ayres Gt. Southern | 5,082 | 11.2.39 | 205,707 | – 18,797 | 33 | 4,496,649 | 4,685,793 | – 189,144 | Ord. Stk. | 17 5/16 | 8½ | 9½ | Nil |
| | Buenos Ayres Western | 1,930 | 11.2.39 | 57,692 | + 8,871 | 33 | 1,404,776 | 1,504,839 | – 100,063 | ,, | 12 5/4 | 5 | 7½ | Nil |
| | Central Argentine | 3,700 | 11.2.39 | 159,817 | + 44,749 | 33 | 3,697,810 | 4,139,617 | – 441,807 | ,, | 13¼ | 5 5/4 | 8 | Nil |
| | Do. | — | — | — | — | — | — | — | — | Dfd. | 6 | 2½ | 3½ | Nil |
| | Cent. Uruguay of M. Video | 972 | 4.2.39 | 20,246 | – 1,350 | 32 | 576,847 | 554,183 | + 22,664 | Ord. Stk. | 3 | 1 1/4 | 1¾ | Nil |
| | Cordoba Central | 1,218 | — | — | — | — | — | — | — | Ord. Inc. | 3 5/4 | 5/4 | 2¼ | Nil |
| | Costa Rica | 188 | Nov., 1938 | 17,764 | – 4,572 | 22 | 112,640 | 123,362 | – 10,722 | Stk. | 28 | 22½ | 20 | 10 |
| | Dorada | 70 | Jan., 1939 | 13,300 | – 4,400 | 4 | 13,300 | 17,700 | – 4,400 | 1 Mt. Db. | 105¼ | 104 | 103½ | 5 15/16 |
| | Entre Rios | 810 | 11.2.39 | 15,986 | – 925 | 33 | 518,923 | 477,651 | + 41,272 | Ord. Stk. | 7¼ | 3½ | 5 | Nil |
| | Great Western of Brazil | 1,092 | 11.2.39 | 12,000 | + 2,700 | 6 | 72,200 | 60,000 | + 12,200 | Ord. Sh. | 3/- | 1/- | 1¼ | Nil |
| | International of Cl. Amer. | 794 | Dec., 1938 | $558,024 | + $83,363 | 52 | $5,639,240 | $5,699,442 | – $60,202 | — | — | — | — | — |
| | Interoceanic of Mexico | — | — | — | — | — | — | — | — | 1st Pref. | 6d. | 6d. | 1/2 | Nil |
| | La Guaira & Caracas | 22¾ | Jan., 1939 | 4,750 | + 140 | 4 | 4,750 | 4,610 | + 140 | Stk. | 8 | 6½ | 7½ | Nil |
| | Leopoldina | 1,918 | 11.2.39 | 19,495 | – 406 | 6 | 130,656 | 118,091 | + 12,565 | Ord.Stk. | 4 | 1 | 1½ | Nil |
| | Mexican | 483 | 7.2.39 | $289,300 | – $32,300 | 5 | $1,565,200 | $1,637,900 | – $72,700 | ,, | 1/4 | 1/16 | 1/8 | Nil |
| | Midland of Uruguay | 319 | Jan., 1939 | 9,886 | – 2,742 | 31 | 64,165 | 65,353 | – 1,188 | ,, | 7/8 | 1/2 | 1/2 | Nil |
| | Nitrate | 386 | 31.1.39 | 5,054 | – 4,599 | 4 | 8,873 | 16,429 | – 7,556 | Ord. Sh. | 52/9 | 19 9/16 | 15/2 | 6½ |
| | Paraguay Central | 274 | 11.2.39 | $2,974,000 | + $716,000 | 33 | $100,228,000 | $103,341,000 | – $3,113,000 | Pr. Li. Stk. | 60 | 55½ | 55 1/8 | 5 7/16 |
| | Peruvian Corporation | 1,059 | Jan., 1939 | 68,313 | – 15,436 | 31 | 477,766 | 587,785 | – 110,019 | Pref. | 5 5/4 | 1 3/4 | 2¼ | Nil |
| | Salvador | 100 | 4.2.39 | £49,500 | + £5,750 | 32 | £591,964 | £581,125 | + £10,839 | Pr. Li. Db. | 23 | 20 | 19½ | Nil |
| | San Paulo | 153¾ | 5.2.39 | 32,312 | + 1,833 | 5 | 141,015 | 160,248 | – 19,233 | Ord. Stk. | 64 | 28 | 23½ | 19 |
| | Taltal | 160 | Jan., 1939 | 3,870 | – 2,425 | 31 | 20,785 | 28,830 | – 8,045 | Ord. Sh. | 13/16 | 1/2 | 1/2 | 10 |
| | United of Havana | 1,353 | 11.2.39 | 44,681 | – 7,596 | 33 | 578,299 | 629,072 | – 50,773 | Ord. Stk. | 3/8 | 1/2 | 1 | Nil |
| | Uruguay Northern | 73 | Jan., 1939 | 983 | – 106 | 31 | 7,438 | 6,437 | + 1,001 | Deb. Stk. | 2 | 1 | 2 | Nil |
| Canada | Canadian National | 23,721 | 7.2.39 | 632,739 | – 19,037 | 5 | 3,331,740 | 3,316,103 | + 15,637 | — | — | — | — | — |
| | Canadian Northern | — | — | — | — | — | — | — | — 4 p.c. | Perp. Dbs. | 72 | 60 | 70½ | 5 11/16 |
| | Grand Trunk | — | — | — | — | — | — | — | — | 4 p.c. Gar. | 104 | 90 | 97½ | 4¼ |
| | Canadian Pacific | 17,186 | 7.2.39 | 456,800 | – 6,800 | 5 | 2,396,600 | 2,526,600 | – 130,000 | Ord. Stk. | 8 7/16 | 4¼ | 5½ | Nil |
| India† | Assam Bengal | 1,329 | 20.1.39 | 44,047 | + 4,141 | 43 | 1,206,137 | 1,109,964 | + 96,173 | Ord. Stk. | 8½ | 70 | 74½ | 4 |
| | Barsi Light | 202 | 20.1.39 | 3,112 | – 1,853 | 43 | 113,850 | 110,370 | + 3,480 | Ord. Sh. | 60½ | 54¼ | 55½ | 7 5/16 |
| | Bengal & North Western | 2,108 | 20.1.39 | 86,169 | + 7,382 | 16 | 866,414 | 848,891 | + 17,523 | Ord. Stk. | 311 | 278 | 269 | 6 11/16 |
| | Bengal Dooars & Extension | 161 | 31.1.39 | 4,244 | + 286 | 45 | 127,493 | 124,920 | + 2,573 | ,, | 89 | 83 | 88½ | 7 5/16 |
| | Bengal-Nagpur | 3,268 | 31.1.39 | 231,600 | – 4,319 | 45 | 5,790,409 | 5,851,400 | – 60,991 | ,, | 95½ | 90 | 93½ | 4¼ |
| | Bombay, Baroda & Cl. India | 3,085 | 10.2.39 | 266,100 | – 5,850 | 47 | 7,536,450 | 7,631,025 | – 94,575 | ,, | 112 7/16 | 95 | 107½ | 5 9/16 |
| | Madras & Southern Mahratta | 2,967 | 20.1.39 | 161,175 | + 11,099 | 43 | 4,477,524 | 4,238,430 | + 239,094 | ,, | 109 | 97 | 101½ | 7 1/8 |
| | Rohilkund & Kumaon | 571 | 20.1.39 | 17,095 | – 762 | 16 | 159,625 | 155,908 | + 3,717 | ,, | 308 | 285 | 275 | 6 9/16 |
| | South Indian | 2,531¾ | 20.1.39 | 103,158 | – 13,221 | 43 | 3,300,871 | 3,370,042 | – 69,171 | ,, | 104 | 101 | 101½ | 4 15/1 |
| Various | Beira-Umtali | 204 | Nov., 1938 | 86,540 | – 4,097 | 9 | 164,305 | 186,351 | – 22,046 | — | — | — | — | — |
| | Egyptian Delta | 620 | 20.1.39 | 6,330 | – 390 | 43 | 184,789 | 195,718 | – 10,929 | Prf. Sh. | 7/8 | 5/6 | 3/8 | Nil |
| | Kenya & Uganda | 1,625 | Dec., 1938 | 255,468 | + 59,041 | 52 | 2,656,111 | 2,715,524 | – 59,413 | — | — | — | — | — |
| | Manila | — | — | — | — | — | — | — | — | B. Deb. | 49 | 41 | 43½ | 9 5/16 |
| | Midland of W. Australia | 277 | Dec., 1938 | 16,406 | + 1,202 | 26 | 92,286 | 84,335 | + 7,951 | Inc. Deb. | 93 5/4 | 89 | 95 | 4 5/16 |
| | Nigerian | 1,900 | 31.12.38 | 54,784 | – 14,616 | 40 | 1,486,206 | 2,104,835 | – 618,629 | — | — | — | — | — |
| | Rhodesia | 2,442 | Nov., 1938 | 392,385 | – 35,849 | 9 | 779,368 | 895,597 | – 116,229 | — | — | — | — | — |
| | South Africa | 13,285 | 28.1.39 | 626,369 | + 506 | 12 | 27,014,774 | 27,972,423 | – 957,649 | — | — | — | — | — |
| | Victoria | 4,774 | Nov., 1938 | 809,628 | – 62,552 | 22 | 3,874,553 | 3,832,461 | + 42,092 | — | — | — | — | — |

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16

† Receipts are calculated @ 1s. 6d. to the rupee ‡ ex dividend

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being over estimated. The statements are based on the current rates of exchange and not on the par value